HALEY ALDRICH

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**PUBLIC REVIEW DRAFT REPORT ON**

# FORMER KOSMOS MILL REMEDIAL INVESTIGATION
# KOSMOS FLATS AREA
# MORTON, WASHINGTON

by
Haley & Aldrich, Inc.
Seattle, Washington

for
Tacoma Power
Tacoma, Washington

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November 11, 2025



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# SIGNATURE PAGE FOR

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MORTON, WASHINGTON

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TACOMA POWER
TACOMA, WASHINGTON

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## List of Abbreviations and Acronyms

| | |
|---|---|
| AEC | Anderson Environmental Contractors |
| AIRO | AIRO Environmental Services |
| AO | Agreed Order |
| APE | area of potential effect |
| bgs | below ground surface |
| BMPs | Best Management Practices |
| BTEX | benzene, toluene, ethylbenzene, and xylenes |
| CEC | contaminants of ecological concern |
| COC | contaminant of concern |
| COPC | contaminant of potential concern |
| cPAH | carcinogenic polycyclic aromatic hydrocarbon |
| CSM | conceptual site model |
| CUL | cleanup level |
| DAHP | Department of Archaeology and Historic Preservation |
| DOWL | DOWL Engineers |
| DCAP | draft Cleanup Action Plan |
| DSR | Data Summary Report |
| Ecology | Washington State Department of Ecology |
| EcoSSLs | Ecological Soil Screening Levels |
| EHD | Environmental Health Disparities |
| EIM EDAT | Environmental Information Management Data Analysis Tool |
| EJ | Environmental Justice |
| EM61 | time-domain electromagnetic |
| EPA | U.S. Environmental Protection Agency |
| EPH | extractable petroleum hydrocarbons |
| ERTS | Environmental Report Tracking System |
| FS | feasibility study |
| GPR | ground penetrating radar |
| Haley & Aldrich | Haley & Aldrich, Inc. |
| IRA | independent remedial action |
| ISM | incremental sampling methodology |

| | |
|---|---|
| LUST | leaking underground storage tank |
| µg/L | microgram per liter (also parts per billion - ppb) |
| mg/kg | milligram per kilogram (also parts per million - ppm) |
| mg/L | milligrams per liter |
| MTCA | Model Toxics Control Act |
| NAPL | non-aqueous phase liquid |
| NAVD 88 | North American Vertical Datum of 1988 |
| NRHP | National Register of Historic Places |
| PAH | polycyclic aromatic hydrocarbon |
| PCBs | polychlorinated biphenyls |
| PCUL | preliminary cleanup level |
| PCE | tetrachloroethene |
| PLP | potential liable person |
| POC | points of compliance |
| PQL | practical quantitation limit |
| RCW | Revised Code of Washington |
| RI | remedial investigation |
| RIWP | Remedial Investigation Work Plan |
| SCO | sediment cleanup objective |
| SL | screening level |
| SPP | solidified petroleum product |
| Tacoma Power | City of Tacoma, Power Division |
| TCE | trichloroethene |
| TCL | Tacoma City Light |
| TCLP | toxicity characteristic leaching procedure |
| TEE | terrestrial ecological evaluation |
| TEQ | toxic equivalent concentration for cPAHs |
| TOC | total organic carbon |
| TPH-D | diesel-range total petroleum hydrocarbon |
| TPH-G | gasoline-range total petroleum hydrocarbon |
| TPH-O | oil-range total petroleum hydrocarbon |
| TSS | total suspended solids |
| UST | underground storage tank |

| | |
|---|---|
| VOC | volatile organic compound |
| VPH | volatile petroleum hydrocarbons |
| WAC | Washington Administrative Code |
| WCRA | Willamette Cultural Resource Associates, Ltd. |
| WQPP | Water Quality Protection Plan |

# 1. Introduction

On behalf of The City of Tacoma, Power Division (Tacoma Power), Haley & Aldrich, Inc. (Haley & Aldrich) has prepared this remedial investigation (RI) report to characterize the nature and extent of environmental impacts at the former Kosmos Mill (Site). The Site is located approximately 7.3 miles southeast of Morton, Washington (tax parcel number 030775001000) and is accessible off State Route 12 via Kosmos Road, followed by Champion Haul Road (Figure 1).

A seep of petroleum hydrocarbons was discovered along the bank of Rainey Creek near the Site (Figure 2a). Tacoma Power began investigations and implemented measures to mitigate risks to human and environmental health once the seep was discovered. The Site currently includes parts of the former Kosmos Lumber Mill and the bank of Rainey Creek, shown within the area of potential effect (APE) in Figure 2b. The following is a detailed summary of events at the Site.

**Seep Discovery:**

- April 2019 - The first seep was discovered and reported to the Washington State Department of Ecology (Ecology). On April 26, 2019, Ecology spills response staff received a report (Environmental Report Tracking System [ERTS] no. 688792) of "black oily liquid" coming out of the hill slope and into Rainey Creek. Ecology completed a Site visit on April 27, 2019 and confirmed the presence of a black oily liquid seeping from the bank and layered in sediment along Rainey Creek, a tributary to Riffe Lake. Sampling of the seep material indicated the presence of an oil hydrocarbon, identified by the laboratory as Bunker C. The laboratory analytical report for the seep sample (Bank#2) provided by Ecology is included in Appendix A of the Data Summary Report (DSR), dated February 19, 2021 (Haley & Aldrich, 2021a). Since Bunker C is a heavy oil hydrocarbon, future samples were analyzed for diesel- and oil-range total petroleum hydrocarbons (TPH; TPH-D and TPH-O, respectively).
- May/June 2019 - Ecology requested periodic visual inspections of the Site by Tacoma Power. In mid- to late-May 2019, the water levels in Riffe Lake and Rainey Creek rose above the petroleum seep elevation. In a Rainey Creek water quality sample collected on June 5, 2019 near the seep, TPH-D, TPH-O, and volatile organic compounds (VOCs) were not detected at or above laboratory reporting limits. The laboratory report for the water quality sample (Rainey Creek) provided by Tacoma Power is included in Appendix A of the 2021 DSR.

**Remedial Investigation Begins:**

- July 2019 - Tacoma Power selected Haley & Aldrich (formerly known as Hart Crowser) as the environmental consultant to conduct a remedial investigation and feasibility study (RI/FS) for this project.

  Tacoma Power updated the Kosmos Town and Mill Site archaeology site form (45LE529) and submitted to the Department of Archaeology and Historic Preservation (DAHP), requesting concurrence that the Site not be eligible for inclusion in the National Register of Historic Places. Tacoma Power received agreement from DAHP in September 2019, after a cultural resources survey was completed (see September 2019 bullet below).
- August 2019 - During a pre-investigation Site visit on August 9, 2019, material observed with tar-like consistency and petroleum-like odor was discovered in the upland area (labeled as "oil boils" in Figures 2A and 2B). Tacoma Power collected a sample from the northern oil boil for

chemical analysis and confirmed it contained TPH-O. The laboratory report for the oil boil sample (Kosmos-Upland) is included in Appendix A of the 2021 DSR.

- September 2019 - Tacoma Power's archaeological consulting firm, Willamette Cultural Resource Associates, Ltd. (WCRA), completed an archaeological survey of the proposed Site for permitting the APE. The APE was identified based on the archaeological survey. Haley & Aldrich reviewed Tacoma Power's historical documents and completed an online records review of Ecology's documents and environmental database Site assessment reports.

**Sheen and Additional Seeps Discovered:**

- October 2019 - Water elevations of Riffe Lake and Rainey Creek decreased, and a sheen was observed in the creek on October 4, 2019. Tacoma Power immediately deployed Best Management Practices (BMPs) within the creek and along the bank and shoreline to prevent additional petroleum-impacted material from entering the creek. BMPs included oil-adsorbing pom poms, sweeps, pads, and booms in addition to plastic sheeting covering the bank.

  On October 10, 2019, Tacoma Power collected a sample of the seep material and the results confirmed the presence of TPH-D, TPH-O, and polycyclic aromatic hydrocarbons (PAHs) in the sample. The laboratory analytical report for the seep sample (Kosmos Seep) is also included in Appendix A of the 2021 DSR.

- November 2019 - Tacoma Power declared an emergency in order to quickly implement an independent remedial action (IRA) to address the exposed seeps before the water levels in Riffe Lake rose and inundated the seep areas.

  Additional petroleum-like seeps were observed along Rainey Creek's bank, south of the original seep and at a lower elevation, near the toe of the creek bank (Figure 2a).

**Site Investigation and Emergency Independent Remedial Action:**

- November 2019 - A geophysical survey was conducted in advance of preparing the Remedial Investigation Work Plan (RIWP), which was completed on December 6, 2019 (Hart Crowser, 2019). The geophysical survey included the use of ground penetrating radar (GPR) and a time-domain electromagnetic (EM61) system that is included in Appendix E of the 2021 DSR.

  Anderson Environmental Contractors (AEC) mobilized their equipment on-site in preparation for the emergency IRA and protective cap installation activities.

- December 2019 - The APE was expanded, a protective engineered cap was designed, the bank was excavated for the cap installation (which included excavation of impacted material), the cap was installed, and the RIWP was completed (dated December 6, 2019) and implemented. The 2019 RIWP included conducting test pits, drilling borings, collecting soil samples, and collecting grab groundwater samples from boreholes. The 2021 DSR details the initial investigation of the Site and describes emergency IRA (including soil removal, soil sampling on the bank, cap placement, surface water sampling in Rainey Creek during and after the IRA, and surface water sampling in ponded water in the upland area) conducted at the Site.
  - For the APE expansion, all newly proposed areas where soil would be disturbed were archaeologically surveyed. WCRA prepared a memorandum for Tacoma Power stating that the planned areas in the newly proposed APE were all within the historical Kosmos Mill Site, which was determined to be ineligible for listing on the National Register of Historic Places (NRHP). No new feature areas were observed and WCRA recommended

Tacoma Power utilize their Inadvertent Discovery Plan and spot check sub-surface profile exposures moving forward.

- Haley & Aldrich designed the protective engineered cap to be placed on the bank to help reduce the potential for petroleum to discharge to Rainey Creek. The protective cap material and design documents are provided in Appendices I and J of the 2021 DSR.
- After the protective cap design was completed, AEC, under the direction of Tacoma Power, excavated the bank and installed the protective cap. As part of the protective cap construction effort, surface water quality samples were collected at the request of Tacoma Power to comply with their 401 Water Quality Certification for the Cowlitz Project. Following the excavation for the protective cap area, soil samples were collected along the bank and the edge and bottom of the bank to characterize soil that would remain in-place. All excavated petroleum-impacted soil was placed on plastic and stockpiled on-site for future disposal, which was completed in February 2020.
- While the creek bank was being excavated, test pit and drilling explorations were performed in general accordance with the 2019 RIWP. Soil samples and grab groundwater samples were collected, selected for chemical analysis, and submitted to the laboratory.
- Excavation activities were completed on December 18, 2019, and Tacoma Power continued the surface water sampling and analysis from December 19, 2019 through March 3, 2020.

- January 2020 - Ecology issues a potential liable person (PLP) status letter to Tacoma Power dated January 7, 2020, pursuant to Revised Code of Washington (RCW) 70.105D.040(2) and Washington Administrative Code (WAC) 173-340-500. Based on this change, the RI/FS was placed on hold to follow the Agreed Order (AO) process.
- February 2020 - As part of the emergency IRA and in conformance with Tacoma Power's Water Quality Protection Plan (WQPP), provided in Appendix D of the 2021 DSR, approximately 186,200 gallons of rainwater that was impacted by the oil seeps during the construction of the cap was pumped into holding treatment tanks and then disposed of at the City of Morton's, PRS Group's, and the City of Tacoma's wastewater treatment facilities. Additionally, approximately 10,956 tons of impacted soil previously excavated and stockpiled on plastic as part of the emergency IRA was disposed of off site at the Cowlitz County Headquarters Landfill and Hillsboro Landfill. Following stockpile removal, the emergency IRA was completed as of February 8, 2020.
- March through December 2020 - Beginning in March 2020, Tacoma Power observed a petroleum-like sheen on ponded water in the former stockpile area. A surface water sample was collected on March 3, 2020 (SOP 1) and the analytical data was summarized in Table 6 of the 2021 DSR. The sheen was believed to be a result of some residual material from the former stockpile and test pits were proposed in that location for the 2021 RIWP.

  Tacoma Power conducted routine follow-up inspections and observed the ponded surface water dissipating. The area was seeded in April 2020 to promote vegetation growth and stabilize the Site.

  Additional petroleum-like sheens were observed by Tacoma Power in ponded surface water at the stockpile area in June, July, August, October, and December 2020. Oil absorbent pads were placed in areas with sheen in December 2020. No ponded surface water left the stockpile area in 2020.

- Summer 2020 - Tacoma Power observed that the vegetation struggled to establish in the former stockpile area, especially in the areas of ponded water. This water remained late into the summer. The area continued to be monitored by Tacoma Power and was graded and reseeded for vegetation.
- August 2020 - An AO (DE 16955) with Ecology was executed on August 19, 2020 requiring preparation and submittal of a DSR and RIWP, execution of an RI/FS and preparation and submittal of report(s), and preparation and submittal of a draft Cleanup Action Plan (DCAP). The RI work is to identify the type and extent of contamination at the Site. The Ecology Facility Site identification number is 61559576.
- January to November 2021 - Petroleum-like sheens were observed by Tacoma Power in ponded surface water at the stockpile area in January, February, March, July, and October of 2021. Tacoma Power placed oil absorbent pads in areas with observable sheen.

  In July and August 2021, Rainey Creek water levels rose and inundated the south end of the protective cap and the solidified petroleum product (SPP) ledge. Two surface water samples (Debris_Ravine_20210713 and SPP_Ledge_20210713) were collected on July 13, 2021 from the creek. Only sample Debris_Ravine_20210713 slightly exceeded the indicator level for copper and zinc and exceeded for TPH-O; however, the laboratory reported that the sample contains heavy oil range organics that do not resemble heavy oil reference patterns. Two additional surface water samples (20210804_Debris_Outlet and 20210804_Debris_Ravine) were collected on August 4, 2021 from the creek and the sample results did not exceed indicator levels for TPH-D or TPH-O and one sample (20210804_Debris_Ravine) exceeded the indicator level for copper and zinc.

  In October and early November 2021, organic-like sheens were observed in Rainey Creek and three surface water samples (20211004_Rainey_Creek, 20211013_Rainey_Creek, and 20211108_Bank_Cap) were collected on October 4, 2021, October 13, 2021, and November 8, 2021, respectively, from the creek. Only sample 20211004_Rainey_Creek contained concentrations that exceeded the indicator level of TPH-O.

  In late November 2021, a sheen was observed in the stockpile area and two surface water samples were collected on November 23, 2021 with one sample from the stockpile area (Stockpile) and one sample from Rainey Creek near the conveyance outfall (Conveyance). The sample results did not exceed indicator levels for TPH-D or TPH-O and one sample (Conveyance) slightly exceeded the indicator level for copper. No ponded surface water left the stockpile area in 2021.

  Tacoma Power's surface water sample results are summarized in Table 1 and analytical laboratory reports are provided in Appendix A.
- February 2021 - In accordance with the AO, a DSR was prepared to document and summarize the initial investigation of the Site performed to-date and to describe the emergency IRA conducted in association with the petroleum seeps. The DSR, dated February 19, 2021, was approved by Ecology on February 24, 2021 and indicated several areas where additional data would be needed to fully assess the Site. Additional Site details and environmental investigations to date are provided in the 2021 DSR.
- April/May 2021 - A layer of SPP was observed as a ledge on the east bank of Rainey Creek on the north side of the ravine and as a partially exposed SPP layer in the ravine east of the SPP ledge. Additional information is provided in Section 3.1.3 of the 2021 RIWP (Haley & Aldrich, 2021b).

- Summer and Fall 2021 - Tacoma Power personnel continued to note the SPP locations and to collect the SPP debris as it was discovered and dispose of it off Site as refuse at the local landfill.
- October 2021 - Tacoma Power collected and removed the visible metal debris in the ravine and graded the area by moving some soil from the edges of the ravine to fill in the lower depressed areas to prevent exposure to surface water. Additionally, the SPP layer located north of the ravine was removed approximately 4 feet toward the east and disposed of off Site at Hillsboro Landfill. Ecology's Water Quality Program approved the plan and oversaw construction.
- December 2021 - The RIWP, dated December 30, 2021, was finalized and approved by Ecology on January 11, 2022. The 2021 RIWP was intended to develop the framework to further characterize the nature and extent of environmental impacts and address the data gaps identified in the 2021 DSR. The 2021 RIWP included conducting a GPR survey; soil borings and test pits; installing temporary and permanent groundwater monitoring wells; collecting soil, groundwater, surface water, and sediment samples for chemical analysis; visually inspecting the Site and the banks of Rainey Creek; and inventorying areas of SPP and debris. Data gaps identified in the RIWP are listed below and additional details can be found in the RIWP:
  - Extent of Contamination in the Upland Area,
  - Extent of Contamination along the Creek Bank,
  - Extent of the Pipe Network,
  - Abandoned Culvert and Drainage Ravine, and
  - Elevated Metals in Groundwater.
- January to April 2022 - Organic-like sheens were observed by Tacoma Power in ponded surface water at the stockpile area in January, February, March, and April of 2022. Four surface water samples (SH1-22 Sample 1, SH4-22 Sample 2, SH5-22 Sample 3, and SH2-22 Sample 4) were collected between January and March 2022 and sample results did not exceed indicator levels for TPH-D or TPH-O. One or more samples exceeded indicator levels for cadmium, chromium, copper, lead, and zinc; however, the samples had elevated turbidity, which most likely skewed the metal analytical results high. No ponded surface water left the stockpile area in 2022. Tacoma Power's surface water sample results are summarized in Table 1 and analytical laboratory reports are provided in Appendix A.
- 2022 to present - Implementation of the 2021 RIWP, including conducting a copper background study in June 2025, and preparation of this RI report. Sheens on ponded water were not observed or reported since April 2022.

The purpose of the RI is to collect data necessary to adequately characterize the Site for developing and evaluating cleanup action alternatives. This information will be used to develop, select, and implement a cleanup action. The RI was conducted in accordance with the Model Toxics Control Act (MTCA)—WAC 173-340-350. The results of this RI will be used to prepare a FS report and DCAP. The cleanup outlined in the DCAP, if approved by Ecology and after public comment, will be implemented at the Site under a separate AO with Ecology.

# 2. Site Background

The background and physical setting information summarized below are based on Site visits and review of prior environmental data and documents.

Historically, the Site was established as a lumber mill in 1904. The former mill included railroad lines/tracks, several buildings, and a log pond (Figure 2b). The City of Tacoma purchased the former Kosmos townsite and lumber mill in the 1960s and the inhabitants were relocated. The land was acquired to create the Riffe Lake reservoir for recreational use and power generation. The lumber mill facility was abandoned and demolished prior to the 1968 completion of Mossyrock Dam. Riffe Lake is currently a component of the Cowlitz River Hydroelectric Project operated by Tacoma Power. Additional Site background and description information are provided in the 2021 DSR.

## 2.1 SITE DESCRIPTION

Tacoma Power's property (Property) is located in Rainey Valley, within the Riffe Lake reservoir, in an area referred to as Kosmos Flats and was purchased by the City of Tacoma in the 1960s. Rainey Creek bounds the Property to the north and west, Champion Haul Road to the east, and Riffe Lake to the south.

The Site is located within the Property with Rainey Creek to the west, the former log pond area to the south, an old mill road and the former stockpile area from the emergency IRA to the east, and the north bank of the ravine and old mill road to the north (Figure 2a and 2b). The Site topography generally slopes to the south toward Riffe Lake, but the local topography gradually slopes to the northwest, toward Rainey Creek in the area near the identified petroleum seeps which were covered by a protective cap under the emergency IRA in 2019 (and described in the 2021 DSR).

The Kosmos Flats is a plateau and is referred to in this RI report as the upland area. This area was formerly the location of the Kosmos lumber mill. The building foundation, railroad rails, metal, and concrete debris from the former mill can be seen in the upland area. The former mill location is on the east bank, above an outside bend of Rainey Creek channel. Other Site features include a surface water conveyance ditch and a former log pond dike. There is approximately a 38-foot elevation difference between the top and bottom of the creek's bank and the bank ranges from 1 horizontal to 1 vertical (1H:1V) to 3H:1V slope along the Site. Downstream of the protective cap, the bank is generally at a 2H:1V slope. At the protective cap, the bank's slope is generally at a 3H:1V slope. Upstream of the protective cap, the bank steepens to 1H:1V with almost vertical portions for an approximate 300-foot length before the slope becomes less steep. Near the cap on the upstream side is a ravine that trends from the creek's bank to the east toward the upland area of the Site. This ravine contained metal and other debris from historical mill operation; however, most of the visible debris was removed by Tacoma Power in October 2021.

### 2.1.1 Site Elevations

All elevations discussed in this report are taken from the Tacoma City Light (TCL) datum, which is 3.96 feet below North American Vertical Datum of 1988 (NAVD 88).

The spillway at Mossyrock Dam is at an elevation of 728.5 feet. Historically, spring rainfall and snowmelt inundated the Site up to a maximum dam safety design elevation of 781.2 feet. From June to August (or July, if it is a dry summer), the water levels in the reservoir are higher and closer to full-pool levels. The reservoir's normal full-pool elevation is approximately 778.5 feet, which is the regulated Ordinary High Water Line and would submerge the upland portion of the Site.

In recent years, the reservoir's full-pool water levels have been maintained at an approximate elevation of 749 feet due to seismic safety concerns with the Mossyrock Dam spillway piers. This has prevented inundation and allowed the Site to be exposed for extended durations and for vegetation to grow.

The Site's ground surface elevation ranges from approximately 718 feet near the petroleum seep area at the toe of Rainey Creek to approximately 758 feet in the upland area at the top of the bank near the old lumber mill foundations. Rainey Creek's bed is at an approximate elevation of 716 feet adjacent to the protective cap. During the 2019 investigation and protective cap construction, Rainey Creek water elevation was approximately 719 feet. During a storm event in the winter of 2019/2020, high inflows led to a rise in Rainey Creek and Riffe Lake's water levels. The associated backwatering resulted in the entire Site being inundated on February 8, 2020. After about a week, the water receded, and the upland area was again visible. As of the date of this report, the Site has not been inundated since February 2020.

### 2.1.2 Property Uses

The Property is currently vacant with temporary signage and jersey barriers along the eastern side of the Site. The future Property uses are to be available to the public as a recreational wildlife area when accessible. Tacoma Power intends to return to a normal full-pool elevation of approximately 778.5 feet where the Site would be inundated during portions of the year for public recreation and water storage.

**Parcel and Property Description:**

The Site is within parcel number 030775001000 and located in the southwest quarter of Section 28, Township 12N, Range 05E.

Property legal description is ALL SECTION 28 LESS PART NW4 & PART SECTION 29 LESS N2 NE4 & PART TO NORTHERN PACIFIC RAILROAD COMPANY 28/29-12-5E.

Property use code is 48 Utilities.

**Ecology Site Identifications:**

- Facility/Site ID is 61559576
- Cleanup Site ID is 9890
- Underground Storage Tank (UST) ID is 200555
- Cleanup Site Name is Riffe Lake

**Ecology Oversight:**

- The Site is currently in an AO (DE 16955) with Ecology's Toxics Cleanup Program overseeing the remediation process, including this RI and the future FS and DCAP.

- Tacoma Power also has a 401 Water Quality Certification permit (order no. 11-2001) for their hydroelectric project on Riffe Lake that Ecology's Water Quality Program oversees.

## 2.2 PREVIOUS INVESTIGATIONS AND INTERIM REMEDIAL ACTIONS

### 2.2.1 Underground Storage Tank Removal

Two underground storage tanks (USTs) related to the lumber mill were discovered at the Site in 1992, which were subsequently removed by AIRO Environmental Services (AIRO). The first underground storage tank (UST) was a 500-gallon steel tank, located south of the observed seeps and found partially exposed along an earthen bank of Rainey Creek, labeled Site D in Figure 3. It was filled with lake water and did not exhibit a sheen or other indicators for the presence of petroleum products. Sampling results were not detected at or above laboratory reporting limit of 0.01 milligrams per liter (mg/L) for polychlorinated biphenyls (PCBs) or 10 mg/L for total halogens (AIRO, 1993).

The second UST, a 5,000-gallon tank, was located below ground level near the remaining mill facility foundations, labeled Site A in Figure 2a. The UST contained petroleum product with the presence of halogenated hydrocarbons. Soil containing heavy oil-range petroleum at concentrations exceeding MTCA Method A soil cleanup levels (CULs) surrounded the 5,000-gallon UST. A total volume of 87 cubic yards of contaminated soil was removed and disposed of at the Kitsap County Landfill (AIRO, 1993). The 1993 report is provided in Appendix B of the 2021 DSR.

Ten additional USTs were discovered at the former Kosmos townsite, located approximately one-third of a mile to the northeast of the Site and north of Rainey Creek (Figure 1). Approximately 25,900 tons of contaminated soil was excavated from the townsite, remediated in that location using thermal desorption, and used as backfill for the excavations. Analytical results of groundwater samples collected by DOWL Engineers (DOWL) within the former townsite indicated that contaminants did not migrate away from the UST perimeter set by the monitoring wells, but concentrations above MTCA Method A CULs were detected in the suspected central area of the contaminated plume (DOWL, 1993). As the former Kosmos townsite is located one-third of a mile northeast from the Site, the DOWL 1993 report was not included as an appendix to the 2021 DSR.

### 2.2.2 2019 Initial Site Investigation and Emergency Independent Remedial Action

In 2019 and 2020, following the observation of the seep in April 2019, an initial investigation and emergency IRA were conducted at the Site (Figure 2a). In November and December 2019, twelve test pits (TP-2, TP-3, TP-5 through TP-8, and TP-10 through TP-15) were excavated to depths of 5 to 20 feet below ground surface (bgs) and ten sonic borings (borings B-1 through B-10) were advanced to depths of 40 to 50 feet bgs in the upland area of the Site. Grab groundwater samples were collected from four of the borings (B-4, B-6, B-7, and B-9).

Analytical results from soil samples collected from borings and test pits indicate the presence of gasoline-range total petroleum hydrocarbons (TPH-G), TPH-D, TPH-O, and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in soil at concentrations above CULs, primarily in the upper 10 to 15 feet of soil in the upland area of the Site during the 2019 investigation. An isolated area near the former Site A (5,000-gallon UST) was found to contain petroleum-contaminated soil in the upper 2.5 feet bgs. Additionally, TPH-D, TPH-O, and cPAHs were found in soil above CULs on the edge of the creek bank and bottom as well as the creek bank underneath the protective cap.

Two groundwater samples were analyzed for and contained total metals (arsenic, cadmium, chromium, and lead) above CULs; however, the samples also contained high levels of turbidity and total suspended solids (TSS).

As part of the emergency IRA, AEC, Tacoma Power's selected contractor, temporarily diverted the flow of Rainey Creek away from the work area in order to excavate the surface and subsurface contamination. During this flow diversion, non-aqueous phase liquid (NAPL) was observed (brown, oil-like, and heavy sheen) at the edge of the bank and creek bottom directly adjacent to the location of the petroleum seeps on the bank. After excavation in the area where the protective cap was to be installed, one soil sample was collected from the exposed edge of the bank and next to the creek bottom (sample Creekbed 1 on Figure 2a) at an approximate elevation of 717 feet, three additional soil samples were collected from the lower bank (samples LB-1 through LB-3) at an approximate elevation of 719 to 718 feet, and three soil samples were collected from the upper bank (samples UB-1 through UB-3) at an approximate elevation of 746 to 745 feet. The samples were analyzed for TPH-G, TPH-D, TPH-O, metals, PAHs, and VOCs. TPH-D, TPH-O, and cPAHs were detected at concentrations above MTCA Method A CULs in soil samples Creekbed 1 and LB-2, all other analytes were either not detected at or above laboratory reporting limits or were detected at concentrations below applicable MTCA Method A CULs.

Surface water samples of Rainey Creek were collected in general accordance with Tacoma Power's WQPP, to monitor the effectiveness of the BMPs that Tacoma Power had implemented during earthwork activities during the emergency IRA. Surface water sample analytical results showed elevated TPH-O, TPH-D, copper, and zinc in areas adjacent to the construction area, but not downstream of the protective cap area, indicating the effectiveness of the BMPs.

Surface water samples were collected by Tacoma Power from ponded water in or near the stockpile during the emergency IRA in December 2019 and January 2020. Water from heavy rains and surface runoff around the stockpile had to be diverted to keep the stockpile from becoming saturated. A surface water sample (Stockpile #1) was collected within the stockpile area and the analytical results were above indicator levels for pH, turbidity, TPH-D, and TPH-O. Surface water from the diversion trench was sampled (T1 and T2) multiple times in January and February 2020. The analytical results were below the indicator levels, except for pH for the February event.

To remove the stockpiles in an expedited manner, Tacoma Power had to maintain a low water level in the area. Due to heavy rains and surface runoff, the volume of water was increasing in the stockpile area, requiring Tacoma Power to intermittently discharge to the log pond area for infiltration for approximately 8 hours on February 8, 2020. Two surface water samples (Log Pond #1 and Log Pond #2) were collected. The sample results were above the indicator levels for pH and turbidity (Log Pond #2 only), and were below indicator levels for TPH-D and TPH-O.

Ponded water was observed in the former stockpile area and near the former building foundations. These areas were sampled (SOP 1 and COP 1, respectively) on March 3,2020. The samples contained concentrations of pH, turbidity, copper, and zinc above the indicator levels. Sample SOP 1 contained elevated concentrations of TPH-D and TPH-O above indicator levels.

There were no releases of the ponded water tested in March 2020 outside of the stockpile area. The stockpile area was seeded in April 2020 to promote vegetation growth. The vegetation struggled to establish within the stockpile area, especially in the depressed areas where water ponded. Additional

petroleum-like sheens were observed, and in September 2020, Tacoma Power submitted a plan to Ecology that was reviewed and approved to cover the stockpile area with bioretention soil and biofiltration seed. This temporary measure is to further stabilize the stockpile area, fill in the depressed areas to promote drainage, and to promote further vegetation growth.

More details about the initial investigation of the Site, the emergency IRA, analytical results, and sample locations are described in the 2021 DSR.

### 2.2.3 2021 Site Investigation by Ecology and Debris Removal by Tacoma Power

During a March 2021 on-site visit by Ecology's Water Quality Program, a layer of SPP was observed as a ledge on the east bank of Rainey Creek on the north side of the ravine (Figure 3). The layer is resistant to erosion as it is observed to be sand and gravel cemented in a hard petroleum matrix and was overhanging the stream bank along the bank top (i.e., the soil beneath the SPP had been eroded). The ledge of the SPP is approximately 16 feet long by 2 feet wide and 3 to 7 inches thick, and the eastern portion is covered with alluvium.

On April 16, 2021, Ecology sampled the SPP ledge and submitted for chemical analysis of TPH-D; TPH-O; TPH-G; total metals (arsenic, cadmium, chromium, hexavalent chromium, copper, lead, nickel, zinc, and mercury); PAHs; benzene, toluene, ethylbenzene, and xylene (BTEX); and extractable and volatile petroleum hydrocarbons (EPH and VPH, respectively). Analytical results indicated concentrations in soil exceed MTCA Method A CULs for TPH-D, TPH-O, and cPAHs. There were detectable concentrations of some metals below applicable MTCA Method A CULs. There were no detectable concentrations in the VPH range or for BTEX compounds. There were detectable concentrations in the EPH range. Since this Site can be submerged during high reservoir levels, leach testing was performed on the SPP ledge soil sample to determine if there was a risk to surface water quality. The leaching test was completed using distilled water in a modified toxicity characteristic leaching procedure (TCLP) and the leachate (labeled as Rinsate in the laboratory report) was analyzed for TPH-D, TPH-O, and metals. Results show TPH-D, TPH-O, and copper levels exceed WQPP indicator levels. The laboratory report for the Ecology samples were provided in Appendix D of the 2021 RIWP.

In May 2021, Tacoma Power personnel observed a partially exposed SPP layer in the ravine east of the SPP ledge. It is not known if this is connected to the SPP ledge. The eastern portion of this layer is also covered by alluvium.

SPP debris was found scattered on the Site's upland surface and Rainey Creek bank. Tacoma Power personnel are continuing to note the location and collect this debris as it is discovered and dispose of it off Site. As of early 2024, Tacoma Power inspects the Site on a bi-weekly basis.

On October 4 and 5, 2021, Tacoma Power collected and removed the visible metal debris in the ravine and graded the area by moving non-impacted soil from the edges of the ravine to fill in the lower, depressed areas to prevent exposure to surface water. Additionally, the SPP layer located north of the ravine was removed approximately 4 feet toward the east and disposed of off Site to Hillsboro Landfill. Ecology's Water Quality Program approved the plan and oversaw construction.

## 2.3 GEOLOGY AND HYDROGEOLOGY

Our understanding of Site geology and hydrogeology is based on explorations and wells completed by Haley & Aldrich in 2019, 2022, and 2025 and historical investigation activities completed by AIRO.

### 2.3.1 Geology

The Site is located along Rainey Creek in the Cowlitz River watershed. During the late Pleistocene, the Cowlitz glacier extended from its source on Mount Rainier roughly to the town of Salkum, Washington, west of the Site. During this Epoch, the Cowlitz glacier advanced and retreated on at least four distinct occurrences. These glaciations produced three distinct outwash deposits. The earliest deposit was the Wingate Hill outwash, followed by the Hayden Creek drift, and most recently the Evans Creek outwash.

In the Rainey Creek valley, glacial deposits are represented as the Hayden Creek drift. The Hayden Creek drift is dominantly composed of outwash deposits expressed as poorly graded gravel deposits and localized till deposits. It is also common to find loess deposits up to 3 feet thick in the Hayden Creek formation. The entire Hayden Creek formation is described as heavily oxidized to depths up to 30 feet.

Soil from borings and test pits conducted by Haley & Aldrich (during the 2019 initial investigation of the Site and 2022 RI) are generally consistent with expected outwash deposits of the Hayden Creek formation. Soil in the upland area generally consisted of sandy silts to silty sands with gravel in the upper 5 to 15 feet and silty gravel with sand and some cobbles to poorly graded coarse sand below 15 feet. Additionally, localized fine-grained organic deposits of silt and clay were found in low-lying vegetated areas in the upper 5 feet during the 2019 initial investigation of the Site and 2022 RI. Topsoil consisting of soil material with high organic content was generally encountered in the first couple of feet. Shallow soil encountered during the 2025 copper background study was consistent with the 2019 and 2022 investigations and consisted of sandy silts to silty sands with varying amounts of gravel, cobbles, and organics. Fill material was also encountered in the upper 5 to 10 feet containing concrete, wood, and metal debris. Silts and/or clay with sand and gravel was generally encountered below the topsoil and was observed up until approximately 5 to 15 feet bgs. Fill also contains TPH-like staining below 28 feet bgs to 35 feet bgs in exploration B-2 (petroleum analytical results from soil sample collected at a depth of 30 to 35 feet bgs were not detected at or above laboratory reporting limits for TPH-G, TPH-D, and TPH-O). The outwash deposits were encountered below the fill. Till-like material was only observed in the bank samples taken on the west side of Rainey Creek, opposite of the Site. Based on observations during the emergency IRA construction and sediment samples collected along Rainey Creek, the sediment material generally consists of gray clayey sand with gravel and cobbles.

Generalized subsurface cross-sections A-A’ and B-B’ are illustrated in Figures 4 and 5, respectively.

### 2.3.2 Hydrogeology

In 1992, groundwater was encountered during the excavation of Site A at approximately 10 to 11 feet bgs (AIRO, 1993). In 1993, at the former townsite (located to the northeast of the Site) groundwater was encountered during the assessment at approximately 6 to 11 feet bgs and flowed to the southwest, toward Riffe Lake, and that depth to groundwater varies seasonally (DOWL, 1993).

During the Site investigations, deeper groundwater in the upland area was generally encountered from 36 to 47 feet bgs (an approximate elevation of 710 to 721 feet), and shallower groundwater was

generally encountered from 5 to 15 feet bgs (an approximate elevation of 741 to 754 feet). The elevation of Riffe Lake reservoir during the time of the investigations ranged from approximately 692.5 to 747.7 feet (Figure 6; U.S. Geological Survey, 2023). Figures 7a and 7b illustrate the shallow and deep groundwater elevations collected from the investigations and compared with the published Riffe Lake reservoir elevations, respectively. Groundwater measurements collected during the RI activities by Tacoma Power and Haley & Aldrich staff are presented in Table 2.

Based on the historical groundwater information and groundwater conditions found at the time of the investigations, deep groundwater levels are inferred to be tied to the reservoir levels, as we observed a stable deep groundwater elevation (around 717 to 720 feet) when lake levels are low and then an increase in deep groundwater elevations when the reservoir levels rise. The shallow groundwater levels have more seasonal variation in the winter and spring months (Figure 7b); however, there does seem to be some comparison to shallow groundwater elevations to reservoir levels, specifically in MW-3S (Figure 7a). Groundwater elevations may fluctuate as water is retained and released from the Mossyrock Dam. The depth to shallow groundwater generally ranged between 5 and 15 feet bgs (approximate elevation of 754 and 741 feet TCL). Based on the groundwater measurements at the Site, saturated soil was conservatively assumed to be at a depth of 5 feet bgs (approximate elevation of 752feet TCL). Groundwater elevation contours for shallow and deep wells are illustrated in Figures 8 and 9, respectively.

## 2.4 ENVIRONMENTAL JUSTICE

The objective of this section is to understand what Environmental Justice (EJ) concerns may exist for the Site and to anticipate potential EJ concerns related to the Site and the adjacent communities. This effort is required by Ecology, per the newly updated WAC 173-340-350(6). In order to meet this new requirement, we utilized multiple tools to evaluate various indicators for this Site, as they relate to EJ.

The U.S. Environmental Protection Agency (EPA) has developed a new EJ screening and mapping tool (EJScreen), that uses standard and nationally consistent data to identify and highlight places that may have higher environmental burdens and more vulnerable populations (EPA EJScreen, 2023). These maps provide data for mapped regions in percentile format for a variety of indexes, such as pollution measures (e.g., particulate matter and ozone), as well as potentially hazardous substances (e.g., lead paint and USTs).

Our review of the EJScreen tool for the Site shows that the area within a 5-mile radius around the Site is below the 80th percentile for the thirteen EJ pollution and sources indices, compared to other populations across the state and the nation. For reference, anything above the 80th percentile is generally considered to be more despaired than other communities on a national average. The Site appears to exceed the 80th percentile for several socioeconomic indicators, including supplemental demographic index, unemployment rate, less than high school education, over age 64, and low life expectancy. A summary table of Environmental and socioeconomic indicators data compared to state and national percentiles is provided at the end of the EJScreen community report and additional screening details specific to this Site, including socioeconomic indices, are provided in Appendix B.

### 2.4.1 Washington Environmental Health Disparities Mapping

The Washington State Department of Health also has an EJ mapping tool. The Washington Environmental Health Disparities (EHD) Map (WSDH, 2023) is an interactive mapping tool that compares communities across our state for environmental health disparities. The community identified by the

census tract in which the Site is located has relatively low overall cumulative environmental health impacts in the state, with a rank of 2 out of 10 overall risk ranking. However, the area around the Site has a rank of 8 out of 10 for socioeconomic factors and 6 out of 10 for sensitive populations.

Furthermore, the Site census track ranks amongst the highest for ozone concentration, lead risk from housing, no high school diploma percentage, population living in poverty, transportation expense, unemployment percentage, and cardiovascular disease. Additional outputs from the EHD mapping tool are also provided in Appendix B and Table B-1.

These screening results should not be used as a definitive representation of conditions in the community or an assessment of individual risk, but rather as one line of evidence to characterize potential community environmental health burdens and social vulnerability.

## 2.5 CLIMATE CHANGE

As part of the new WAC 173-340-350(6)(f) requirements which went into effect January 1, 2024, details on the current and projected climatological characteristics for this Site are included; however, this will be further evaluated during the FS. The objective of this section is to understand what climate change concerns may exist for the Site and to anticipate how potential climate change concerns may affect the migration of contaminants of concern (COCs).

It is generally agreed upon that this region has been experiencing a higher frequency of wildfires and flooding events due to increased temperatures caused by climate change. Large and severe fires in the Pacific Northwest are associated with warm and dry conditions, and such conditions will likely occur with increasing frequency in a warming climate (Halofsky, Peterson, and Harvey, 2020). The nearby Chehalis River Basin has documented increases in peak seasonal flood levels. For decades, peak seasonal flood levels have been rising, with five of the basin's largest historical floods occurring during the last 30 years (Ecology, 2023a). Key climate change impacts in the region are generally expected to include increased temperatures, more frequent extreme heat events paired with urban heat islands, increased drought risk, invasive plant species, pests and pathogens, sea-level rise, changes in hydrology leading to changes in forests and salmon habitats, increased precipitation resulting in increased stormwater runoff and erosion, and more frequent and intense precipitation events that may lead to prominent flooding (Rutledge and Brandt, 2022). Based off data provided and analyzed by the University of Washington, the average precipitation for Lewis County will increase by 1.8 percent and the frequency of 2-year to 100-year storm events will increase between approximately 10 to 25 percent in the area around the Site (University of Washington, 2023). However, an increase in precipitation and extreme storm events would likely have little impact on the Site, because the area has historically been inundated. Water levels at the Site are also controlled by Tacoma Power through the Riffe Lake Reservoir system; therefore, an increase in surface water levels is not expected to be a significant concern. However, this will be further evaluated in the FS and considered during the development of any cleanup alternatives proposed for the Site.

# 3. 2022 Through 2025 Site Investigation and Characterization

Site investigation was limited to the APE identified by Tacoma Power for cultural resource protection purposes during the RI (Figure 2B). The APE is approximately 12.77 acres and is located directly to the east and southeast of Rainey Creek, as well as along the west bank of Rainey Creek.

Activities performed in the 2019 initial investigation of the Site are summarized in the 2021 DSR and Site investigation activities conducted in 2022 and 2023 for the RI generally followed the 2021 RIWP and included conducting GPR; soil borings and test pits; installing temporary and permanent groundwater monitoring wells; collecting soil, groundwater, surface water, and sediment samples for chemical analysis; visually inspecting the Site and the banks of Rainey Creek; and inventorying areas of SPP and debris.

## 3.1 DEVIATIONS FROM THE WORK PLAN

In general, there were very few deviations from the 2021 RIWP. Figure 3 shows the final exploration locations.

After the potholing subcontractor, River's Edge Environmental Services, visited the Site, it was determined that the potholes could be completed with an excavator rather than a vacuum-truck. The potholes were excavated between May 2 and 6, 2022 and were renamed as test pits (TP-40 through TP-54).

Based on encountered field conditions, four additional test pit locations (TP-36B, and TP-56 through TP-58) were added. TP-36B was added to characterize soil near TP-36 where a pipe was encountered. The pipe contained water that was observed to have a petroleum-like odor and soil directly near the pipe was also observed to have a petroleum-like odor. TP-57 was added to characterize soil to the southwest of TP-51 because petroleum-like impacts were observed. TP-56 and TP-58 were added to characterize soil to the northeast of the Site after petroleum-like impacts were observed in contingency test pits TP-55 and TP-59.

Boring locations B-12 and B-13 were inadvertently switched from the 2021 RIWP proposed locations during field activities. Both borings were completed according to the 2021 RIWP.

For the groundwater monitoring events, deep wells were not monitored in June 2022 since only the shallow monitoring wells were installed at the time of the event. Shallow wells were not monitored during the November 2022 and August 2023 events due to low water levels. Shallow groundwater was only monitored for three events, as opposed to four events; however, Haley & Aldrich believe that these three events give sufficient information to prepare the RI, FS, and DCAP reports.

## 3.2 2022 THROUGH 2023 FIELD INVESTIGATION ACTIVITIES AND OBSERVATIONS

Prior to any ground-disturbing activities for the investigation, private and public utility locate services were performed at the Site. Site exploration locations are shown in Figure 3. Field screening results are summarized in Table 3. Field exploration and sampling methods, and exploration logs are provided in Appendix C.

### 3.2.1 Ground-Penetrating Radar and Visual Inspections

As part of the initial investigation of the Site in 2019, a GPR survey was conducted by Global Geophysics LLC around the former foundations and roadways on the Site and identified multiple areas of metal and/or dense object anomalies and multiple pipes were encountered during the 2019 exploration effort, as identified in green on Figure 2a.

An additional GPR survey was conducted in March 2022, which included the use of GPR and an time-domain electromagnetic (EM61) system. The survey was conducted in areas where known and unknown pipes left in-place were observed during the initial investigation of the Site and cap construction activities. Additional anomalies were observed indicative of pipes or metal debris remaining in-place, identified in green on Figure 3. The anomalies were not indicative of a UST. A copy of the GPR report is provided in Appendix D.

A visual inspection of the cap, upland area, and creek bank was also performed at the same time as the geophysical survey. No obvious signs of environmental impacts, including SPP layers and/or debris, or damage to the cap was observed during the visual inspection.

### 3.2.2 Test Pit, Soil Boring Explorations, and Monitoring Well Installation

The 2019 initial investigation of the Site and emergency IRA identified petroleum-contaminated soil in the upland area (from explorations B-5, B-6, TP-5, TP-6, TP-7, TP-12, and TP-15) and along Rainey Creek's east bank (soil samples Creekbed 1 and LB-2; Figure 2A).

Between May 2 and 6, 2022, 46 test pits (TP-16 through TP-61) were excavated to depths of 10 to 20 feet bgs in the upland area of the Site and along the Rainey Creek bank (Figure 3). Haley & Aldrich collected soil samples generally from between 2- and 5-foot intervals for soil classification and potential chemical analysis.

Piping or pipe debris was encountered in eight test pits, ranging between 1 and 12 inches in diameter. In three of the test pits (TP-34, TP-36, and TP-48), a petroleum-like odor was observed in water in the pipes and/or the soil in the test pit. While excavating two test pits (TP-43 and TP-48), impacted material was observed on one or more sidewalls of the excavation, but was not observed on opposite sidewalls. Samples were collected from each sidewall of the test pits to characterize the potentially impacted and non-impacted material.

On June 27 and 28, 2022, four shallow borings were advanced to depths of 20 feet bgs and completed as monitoring wells (MW-1S through MW-4S). Between 24 and 31 of October 2022, eleven borings were advanced using a sonic mobile rig to depths of 50 to 60 feet bgs, with four borings completed as deep monitoring wells (B-11 through B-17 and MW-1D through MW-4D). Soil samples were collected at 2.5- to 5-foot intervals and grab groundwater samples were collected from borings B-11 through B-17.

The monitoring wells are constructed of 2-inch-diameter Schedule 40 polyvinyl chloride with 10-foot screens in the shallow wells and 20-foot screens in the deep wells. Following completion of the monitoring wells, each well was mechanically developed by surging and then pumping until the groundwater showed minor presence of fine sediments and was not overly cloudy or dark. Table 2 provides the monitoring well construction details.

Soil samples were field screened using sheen tests, visual and olfactory observations, and/or a photoionization detector to detect VOCs in the headspace. Elevated headspace detections (greater than 2 parts per million) were noted in samples collected from test pits TP-21, TP-24, TP-34, TP-36, TP-43, TP-44, TP-48, TP-49, TP-51, TP-55, and TP-59 and borings MW-2D, MW-3S, and MW-3D. Additionally, a petroleum-like odor and/or sheen was observed from test pits TP-21, TP-22, TP-24, TP-25, TP-26, TP-29, TP-34, TP-36, TP-42, TP-43, TP-44, TP-47, TP-48, TP-49, TP-51, TP-55, and TP-59 and borings B-11, B-12, MW-1S, MW-2S, MW-2D, MW-3S, and MW-3D. Field screening results are summarized in Table 3 and provided in the exploration logs in Appendix C.

Per the 2021 RIWP, the selection of samples for analysis was based on observed potential impacts, field screening results, previous investigation sample results, and sample location and depth. Soil analytical results are provided in Table 4.

### 3.2.3 Grab Groundwater Samples

Grab groundwater samples were collected from seven boring locations (B-11 through B-17) in the upland area of the Site (Figure 3). The top of a 5-foot temporary prepacked well screen was set approximately 1- to 2-feet above the observed water table and groundwater was sampled approximately 1- to 2-feet below the observed water table. Samples were collected per the procedures established in the 2021 RIWP. Water quality parameters and depth to water were measured prior to groundwater sample collection and can be found in Table 5. No sheen, NAPL, or odor were observed during grab groundwater sampling.

### 3.2.4 Groundwater Monitoring

Groundwater monitoring was conducted on the eight monitoring wells (MW-1S through MW-4S and MW-1D through MW-4D) on a quarterly basis, except for the following:

- Deep wells were not monitored in June 2022, as only the shallow monitoring wells were installed at the time of the event.
- Due to low water levels in November 2022 and August 2023, the shallow wells were not monitored during these events.

Shallow wells were sampled a total of three times and deep wells were sampled a total of four times. Haley & Aldrich believe these groundwater monitoring events give sufficient information to prepare the RI, FS, and DCAP reports.

Samples were collected per the procedures established in the 2021 RIWP. Water quality parameters and depth to water were measured prior to groundwater sample collection and summarized in Table 5. A petroleum-like odor and sheen were observed in MW-2S and MW-3S during the three sampling events. A sheen or odor were not observed in MW-1S or the deep monitoring wells during the sampling events.

### 3.2.5 Surface Water Sampling

Surface water samples were collected during the 2019 initial investigation of the Site and emergency IRA by Haley & Aldrich. Additional surface water samples were collected after installation of the protective cap and in the upland area in ponded areas by Tacoma Power from December 2019 to February 2022. Based on the surface water samples in the creek during construction of the protective cap, any potential impacts to surface water appeared to be contained by the BMPs. The surface water samples collected

post-construction contained elevated concentrations of copper, zinc, and TPH-O most likely due to increased precipitation and runoff as the upstream sample of the cap area had metals and TPH-O concentrations exceeding the WQPP's indicator levels.

Ponded surface water sample, SOP 1, collected on March 3, 2020 in the upland area near the stormwater diversion trench and the former stockpile area, contained elevated copper, zinc, TPH-D, and TPH-O; these elevated concentrations were most likely due to elevated turbidity in the sample (analytical results are provided in the 2021 DSR). This could have been due to residual impacts from the former stockpile area that was used for the emergency IRA; however, no obvious environmental impacts were observed in soil samples collected from test pits near ponded water sample SOP 1 (TP-37, TP-38, and TP-39). Additionally, soil samples collected from these nearby test pits were not detected at or above laboratory reporting limits for TPH-D and TPH-O. Copper and zinc were detected in the test pit samples with concentrations ranging from 38.2 to 48.4 milligrams per kilogram (mg/kg) and 31.3 to 45.8 mg/kg, respectively.

Tacoma Power observed additional petroleum-like sheens in the stockpile area in June, July, August, October, and December 2021, and organic-like sheens from January to April 2022. Additional samples were collected by Tacoma Power in 2021 (Stockpile) and in 2022 (SH1-22 Sample 1, SH4-22 Sample 2, SH5-22 Sample 3, and SH2-22 Sample 4). The sample results did not exceed indicator levels for TPH-D or TPH-O; however, some samples had metals above indicator levels (Table 1). Most likely, metal results were skewed high due to elevated turbidity in the sample. No sheens were observed in 2023.

In 2022, surface water samples were collected for the remedial investigation from Rainey Creek upstream of the ravine, adjacent to the protective cap, and downstream of the protective cap during two sampling events conducted during the seasonal high and low surface water levels. Surface water samples were collected using a pole with a bottle sampler attached and were collected by submerging the container at the water's surface. Field parameters (turbidity and pH) were also collected at each sampling location during both events and summarized in Table 6. No obvious environmental impacts were observed in the samples collected.

### 3.2.6 Sediment Sampling

Sediment sampling was not conducted during the 2019 initial investigation of the Site or emergency IRA; however, petroleum-contaminated soil was observed in soil samples Creekbed 1 and LB-2, and sediment quality was considered a data gap in the 2021 DSR.

Sediment sampling was performed in April 2022 and October 2022. In April, Rainey Creek was rapidly flowing, and the water depths were observed to be approximately 0.5 to 2.5 feet. Haley & Aldrich representatives were able to collect samples from five locations (SS-1, SS-4, SS-7, SS-8, and SS-11; Figure 3); however, the representatives were unable to collect samples from the other locations due to the water depths being too high and water flowing too quickly for manual collection methods. Generally, refusal was met at 0.5 feet below the creek bottom and sediment consisted of cobbles with sands and gravel. No obvious signs of environmental impacts were observed in the samples collected.

During the October sampling event, water depths were observed to be approximately 0.25 to 0.5 feet. Haley & Aldrich representatives were able to collect samples from all 12 locations. One location (SS-7) was moved from the original location, with Tacoma Power's approval, because refusal was met at 3 inches bgs and an organic, white sheen was observed, most likely from the natural organic matter in

the sediment. Refusal was generally met at approximately 0.5 feet below the creek bottom, except for location SS-4 where refusal was met at approximately 1.5 feet below the creek bottom. Field screening results are summarized in Table 3. No obvious environmental impacts were observed in the samples collected.

### 3.3 2025 COPPER BACKGROUND STUDY

Between June 2 and 5 and on June 11, 2025, fifteen soil samples and one duplicated sample were collected as part of the natural background study to develop Site-specific background soil concentrations for copper. Samples were collected using hand tools between 1 and 5 feet bgs. Per the Copper Background Study Work Plan (Haley & Aldrich, 2025), soil samples were collected from each sample location using incremental sampling methodology (ISM). Thirty sub-samples were collected from each location, except for BSS-13, from randomized sample depths based on the total depth of the boring. BSS-13 met refusal at 14 inches bgs and the soil recovery length from BSS-13 was collected instead of collecting soil subsets. Boring logs related to the background study and a figure (Figure E-1) showing the sample are provided in Appendix E.

Copper was detected between 15 and 50 mg/kg. Using the Ecology MTCA Statistic Environmental Information Management Data Analysis Tool (EIM EDAT) the background concentration was calculated to be 52.15 mg/kg. The analytical results and the results of the MTCA Statistics are provided in Tables E-1 and E-2, respectively.

#### 3.3.1 Deviations from the Copper Background Study Work Plan

Seven sample areas (BSS-2, BSS-10, BSS-11, and BSS-12 through BSS-15) had to be relocated due to access restrictions to the originally planned sample areas or because evidence of the exclusion criteria listed in the Background Study Work Plan were observed. Also, sample BSS-13 was not included in the statistical analysis because the sample was collected from 0 to 14 inches bgs, which deviated from the work plan sampling procedures. Several locations were advanced near BSS-13 proposed location; however, due to the cobbly terrain, the deepest boring was only able to be advanced to 14 inches bgs.

# 4. Chemical Analytical Results

Under standard chain-of-custody procedures, samples were submitted to Friedman and Bruya, Inc. (a Washington State accredited laboratory) for chemical analysis. EPH, VPH, and/or chromium VI sample analyses were sent by Friedman and Bruya, Inc. to Alliance Technical Group (formerly Fremont Analytical, Inc. and a Washington State accredited laboratory) or Onsite Environmental, Inc. (a Washington State accredited laboratory).

Selected soil samples and grab sediment samples were analyzed for one or more of the following analyses:

- TPH-D and TPH-O by Ecology Method NWTPH-Dx;
- TPH-G by Ecology Method NWTPH-Gx;
- EPH by Ecology Method NWEPH;
- VPH by Ecology Method NWVPH;
- PAHs by EPA Method 8270E;
- VOCs by EPA Method EPA 8260D;
- Total metals (arsenic, barium, cadmium, chromium III, copper, lead, mercury, nickel, selenium, silver, and zinc) by EPA Methods 6020B/1631E;
- Chromium VI by EPA Method 7196 or SM 3500 Cr B; and
- Total organic carbon (TOC) (sediment only) by EPA Method 9060/SM 5310.

All groundwater samples were analyzed for the following analyses:

- TPH-D and TPH-O by Ecology Method NWTPH-Dx;
- TPH-G by Ecology Method NWTPH-Gx;
- EPH by Ecology Method NWEPH;
- VPH by Ecology Method NWVPH;
- PAHs by EPA Method 8270E;
- VOCs by EPA Method EPA 8260D;
- Total and dissolved metals (arsenic, barium, cadmium, chromium III, copper, lead, mercury, nickel, selenium, silver, and zinc) EPA Methods 6020B/1631E;
- Chromium VI by EPA 7196 or SM 3500 Cr B; and
- TSS by SM 2540D.

All grab surface water samples were analyzed for the following analyses:

- TPH-D and TPH-O by Ecology Method NWTPH-Dx;
- TPH-G by Ecology Method NWTPH-Gx;
- cPAHs by EPA Method 8270E/625.1 Mod;

- BTEX by EPA Method EPA SW 846/8260D;
- Total metals (arsenic, cadmium, copper, lead, nickel, and zinc) EPA Methods 6020B/200.8;
- Trace-level mercury by EPA Method 1631E; and
- Chromium VI by EPA SM 3500 Cr-B.

Analytical data and the laboratory's internal quality assurance and quality control data were reviewed to assess whether they meet project-specific data quality objectives. This review was performed consistent with accepted EPA procedures for evaluating laboratory analytical data and appropriate laboratory and method-specific guidelines (EPA, 2004, 2008b). The chemical data review summarizing data evaluation procedures, usability of data, and deviations from specific field data and/or laboratory methods for the investigation data are presented in Appendix F. The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned. Sample results are presented in the following section.

## 4.1 SOIL

During the 2022 investigation, 193 soil samples were analyzed for one or more of the analytes listed above and analytical results are presented in Table 4. Detected values and sample locations for COCs discussed in Section 6.2 are shown in Figures 10, 11, and 12.

Soil analytical results were compared to Site-specific MTCA Method B screening levels, the most conservative screening levels for the protection of potable water, sediment via groundwater, and surface water via groundwater in the vadose or saturated zones, MTCA Ecological Indicator Soil Concentration for the Protection of Wildlife (Wildlife Criteria), sediment cleanup objectives (SCOs) for the protection of the Benthic population, and/or natural background concentrations (Ecology, 1994). Screening levels for the protection of the potable water, sediment via groundwater, and surface water via groundwater in the vadose or saturated zones were calculated for a variety of environmental transport and exposure pathways (Ecology, 2024) and are derived from the February 2025 preliminary cleanup level (PCUL) worksheet for South Lake Union. SCOs were applied up to a depth of 1-foot bgs, which is the approximate biotic zone for a lentic body of water (EPA, 2015). Screening levels used at the Site are discussed further in Section 6.3.

### 4.1.1 Total Petroleum Hydrocarbons

Site-specific MTCA Method B Screening levels for the protection of groundwater quality through the leaching pathway in vadose and saturated zone soils were calculated using the MTCA TPH 12.0 tool.

After evaluating EPH and VPH results, three different areas were identified where gasoline-range petroleum hydrocarbons appeared to be the primary constituent. Gasoline-range petroleum hydrocarbons generally fall within the C5-C13 carbon ranges and middle to heavy fuels/oils generally fall within the C8 C34 carbon ranges.

Site-specific screening levels of 1,000 mg/kg for the vadose zone using sample TP-49-S2 and 30 mg/kg[1] for the saturated zone using sample TP-49-S4, were calculated for the areas where gasoline-range

[1] A Site-specific MTCA Method B TPH screening level for the protection of groundwater of 18 mg/kg in the saturated zone was calculated by the evaluation of EPH and VPH results using the MTCA TPH 12.0 tool. However,

petroleum hydrocarbons were the primary constituents. Site-specific screening levels of 1,000 mg/kg for the vadose zone using samples TP-24-S1 and TP-42-S1, and 550 mg/kg for the saturated zone using samples TP-42-S1 and TP-43-S4 were calculated for the areas where gasoline-range petroleum hydrocarbons were not the primary constituents. The calculation spreadsheets and the basis of the selected screening levels are provided in Appendix G.

TPH-D and TPH-O were analyzed in all 193 soil samples and TPH-G was analyzed in 153 soil samples and the following was observed:

- TPH (the sum of TPH-D, TPH-O, and TPH-G) was detected in 42 samples at or above laboratory reporting limits. Thirty-two samples were detected above the Site-specific screening levels.
- TPH-D and/or TPH-O were detected in eight samples collected between 0 and 1 foot bgs at or above the SCO screening level for the protection of the benthic population and/or the terrestrial ecological evaluation (TEE) screening level for the protection of wildlife.
- Most of the soil samples appear to contain petroleum hydrocarbon distributions similar to weathered Bunker C fuel. In areas dominated by gasoline-range hydrocarbons, the hydrocarbon distributions are more representative of a weathered mineral spirit-like product(s).

### 4.1.2 VOCs

VOCs or BTEX were analyzed in 126 soil samples and the following was observed:

- 1,2,4-Trimethylbenzene was detected in seven samples at or above laboratory reporting limits, with five samples containing detectable concentrations above applicable screening levels.
- 1,3,5-Trimethylbenzene was detected in six samples at or above laboratory reporting limits, with five sample containing detectable concentrations above applicable screening levels.
- 2-Chlorotoluene was detected in four samples at or above laboratory reporting limits, with two samples containing detectable concentrations above applicable screening levels.
- 2-Phenylbutane (sec-Butylbenzene) was detected in 16 samples at or above laboratory reporting limits, with one sample containing a detectable concentration above applicable screening levels.
- 4-Chlorotoluene was detected in three samples at or above laboratory reporting limits, with one sample containing detectable concentrations above applicable screening levels.
- Benzene was detected in 15 samples at or above laboratory reporting limits, with 10 samples containing detectable concentrations above the most conservative screening level for the protection of potable water, sediment via groundwater, and surface water via groundwater in the vadose or saturated zones.
- Cymene (p-Isopropyltoluene) was detected in seven samples at or above laboratory reporting limits, with three samples containing detectable concentrations above applicable screening levels.
- Ethylbenzene was detected in 26 samples at or above laboratory reporting limits, with 12 samples containing detectable concentrations above applicable screening levels.

the MTCA Method A TPH soil screening levels were used because the Site-specific screening level was lower than the corresponding MTCA Method A screening level (Ecology, 2023b).

- Hexane was detected in two samples at or above laboratory reporting limits, with one sample containing a detectable concentration above applicable screening levels.
- Isopropylbenzene (Cumene) was detected in 10 samples at or above laboratory reporting limits, with two samples containing detectable concentrations above applicable screening levels.
- Methylene chloride was detected in 33 samples above applicable screening levels. However, the detections were flagged as being due to laboratory contamination, as methylene chloride is frequently used for cleaning laboratory equipment.
- n-Propylbenzene was detected in 11 samples at or above laboratory reporting limits, with three samples containing detectable concentrations above applicable screening levels.
- Tetrachloroethene (PCE) was detected in six samples at or above laboratory reporting limits, with two samples containing detectable concentrations above applicable screening levels.
- Trichloroethene (TCE) was detected in six samples at or above laboratory reporting limits, with all six samples containing detectable concentrations above applicable screening levels.
- Total xylene was detected in 30 samples at or above laboratory reporting limits, with seven samples containing detectable concentrations above applicable screening levels.
- All other VOCs were either not detected at or above laboratory reporting limits or were detected at concentration below applicable screening levels.

### 4.1.3 PAHs

PAHs were analyzed in 128 samples. One or more PAH was detected in 19 of the samples analyzed, and the cPAH-total toxic equivalent concentration (TEQ) was calculated for the samples with detected cPAH analytes.

- 1-Methylnaphthalene was detected in 17 samples at or above laboratory reporting limits, with 14 samples containing detectable concentrations above applicable screening levels.
- 2-Methylnaphthalene was detected in 17 samples at or above laboratory reporting limits, with seven samples containing detectable concentrations above applicable screening levels.
- Benzo(a)anthracene was detected in eight samples, with all eight samples containing detectable concentrations above applicable screening levels.
- Benzo(a)pyrene was detected in four samples, with all four samples containing detectable concentrations above applicable screening levels.
- Fluoranthene was detected in eight samples, with six samples containing detectable concentrations above applicable screening levels.
- Benzo(b)fluoranthene was detected in five samples, with all five samples containing detectable concentrations above applicable screening levels.
- Chrysene was detected in 16 samples, with 12 samples containing detectable concentrations above applicable screening levels.
- The calculated cPAH-TEQ was calculated and detected in 16 samples, with four samples containing detectable concentrations above applicable screening levels.
- Dibenz(a,h)anthracene was detected in one sample above applicable screening levels.

- Fluoranthene was detected in six samples, with five samples containing detectable concentrations greater than applicable screening levels.
- Fluorene was detected in 16 samples, with seven samples containing detectable concentrations above appliable screening levels.
- Indeno(1,2,3-cd)pyrene was detected in three samples, with two samples containing detectable concentrations above applicable screening levels.
- Total naphthalene was detected in 22 samples, with six samples containing detectable concentrations greater than applicable screening levels.
- Pyrene was detected in 20 samples, with 19 samples containing detectable concentrations above the PCUL for the protection of potable water in the vadose or saturated zone.
- All other PAHs were either not detected at or above laboratory reporting limits or were detected at concentration below applicable screening levels.

### 4.1.4 Total Metals

Arsenic, barium, cadmium, chromium (total and/or hexavalent), copper, lead, mercury, nickel, and zinc were detected in one or more samples at or above laboratory reporting limits. Selenium and silver were not detected in the samples analyzed at or above laboratory reporting limits.

- Arsenic was detected above applicable screening levels and the Ecology-derived natural background concentration in one sample.
- Barium was detected above the Wildlife Criteria of 102 mg/kg in 13 samples. Barium was not detected above the Ecology-derived natural background concentration of 255 mg/kg.
- Hexavalent chromium was detected above applicable screening levels in seven samples.
- Copper was detected above applicable screening levels and the Site-specific natural background concentrations in 40 samples.
- Lead was detected above applicable screening levels in six samples.
- Nickel was detected above applicable screening levels and the Ecology-derived natural background concentrations in two samples.
- Zinc was detected above the applicable screening levels in 10 samples.

## 4.2 GROUNDWATER

During the 2022 to 2023 investigation, seven grab groundwater and 24 monitoring well groundwater samples were analyzed for one or more of the analytes listed above in Section 4 and the analytical results are presented in Table 5. Groundwater analytical results were compared to the most conservative screening levels for the protection of drinking water, surface water, and sediment. TPH values and sample locations are shown in Figure 13.

### 4.2.1 Grab Groundwater Sampling

During the October 2022 investigation, seven grab groundwater samples were collected from temporary wells installed in borings advanced at the Site (B-11 through B-17). VOCs, PAHs, TPH-G, TPH-D, TPH-O, and total petroleum hydrocarbons in the diesel and oil range (TPH-D+O) were either not detected at or

above laboratory reporting limits or were detected at concentrations below screening levels. Total copper, lead, and/or mercury were detected at concentrations above their respective PCULs for the Protection of Potable Water in four samples (B-11-W, B-13-W, B-16-W, and B-17-W). Dissolved copper, lead, and mercury were only detected above their respective PCULs for the Protection of Potable Water in one sample (B-11-W); however, the field measurements of turbidity were elevated at 250 nephelometric turbidity unit (NTU), likely resulting in positive bias for the metals concentrations.

### 4.2.2 Groundwater Samples

Groundwater samples were collected from the four shallow wells in June 2022, from the four deep wells in November 2022 and August 2023, and from all eight wells in February and May 2023. TPH-D and TPH-O detections from the shallow monitoring wells were flagged that the sample chromatographic pattern does not resemble the fuel standard used for quantitation. The TPH results are discussed further in Section 5.2.

- During the June 2022 monitoring event, TPH-D+O were detected at concentrations above applicable screening levels for the protection of groundwater and surface water in all four shallow monitoring well samples analyzed. Pyrene was detected above applicable screening levels in MW-2S and MW-3S. 1-Methylnaphthalene and fluoranthene were detected above their respective applicable screening levels in MW-3S. All other analytes were either not detected at or above laboratory reporting limits or were detected at concentrations below applicable PCUL for the protection of Potable Water.
- During the November 2022 monitoring event, all analytes for the four deep monitoring wells sampled were either not detected at or above laboratory reporting limits or were detected at concentrations below applicable screening levels.
- During the February 2023 monitoring event where all eight monitoring wells were sampled, TPH-D+O was detected at concentrations above the applicable screening levels in monitoring wells MW-1S, MW-2S, and MW-3S. Pyrene was detected above applicable screening levels in MW-2S and MW-3S. 1-Methylnaphthalene and fluoranthene were also detected above their respective applicable screening levels in MW-3S. All other samples and analytes were either not detected at or above laboratory reporting limits or were detected at concentrations below applicable screening levels.
- During the May 2023 monitoring event, where all eight monitoring wells were sampled, TPH-D+O was detected at concentrations above applicable screening levels in monitoring wells MW-2S, MW-3S, and MW-4S. TPH-O was detected at concentrations above applicable screening levels in monitoring wells MW-1S, MW-2S, MW-3S, and MW-4S. Total copper was detected above applicable screening levels in MW-1S. Total lead was detected above applicable screening levels in MW-3S. Pyrene was detected above applicable screening levels MW-2S and MW-3S. 1-Methylnaphthalene and fluoranthene were also detected above their respective applicable screening levels in MW-3S. All other samples and analytes were either not detected at or above laboratory reporting limits or were detected at concentrations below applicable screening levels.
- During the August 2023 monitoring event, only total copper and lead were detected in MW-4D above their respective applicable screening levels. Pyrene was detected above applicable screening levels in MW-2S and MW-3S. 1-Methylnaphthalene and fluoranthene were also detected above their respective applicable screening levels in MW-3S. All other analytes for the four deep monitoring wells sampled were either not detected at or above laboratory reporting limits or were detected at concentrations below applicable screening levels.

## 4.3 SURFACE WATER SAMPLING

During the 2022 investigation, six surface water samples were collected. Three samples were collected during the high-water level monitoring event in June 2022, and three samples were collected during the low-water level monitoring event in November 2022. The analytical results are summarized in Table 6.

- During the June 2022 monitoring event, analytes in surface water samples were not detected at or above laboratory reporting limits in the three samples and below the WQPP indicator levels.
- During the November 2022 monitoring event, TPH-D was detected in SW-2 at a concentration of 50 micrograms per liter (µg/L), below the WQPP's indicator level of 250 µg/L. Total chromium was detected in SW-1 and SW-3 at concentrations of 1.01 and 1.30 µg/L, well below the WQPP's indicator level of 259 µg/L. All other analytes were not detected at or above laboratory reporting limits.

## 4.4 SEDIMENT SAMPLING

During the first sediment sampling attempt in April 2022, five sediment samples were collected for chemical analysis (SS-1-S1, SS-4-S1, SS-7-R-S1, SS-8-S1, and SS-11-S1) and results were compared against Ecology's SCO for freshwater sediments. Detected TPH, BTEX, and cPAH values and sample locations are shown in Figure 14 and all analytical results are summarized in Table 7.

- TPH-O was detected in two samples, SS-1-S1 and SS-7-R-S1, at concentrations of 150 and 110 mg/kg, respectively. Results from both samples were below the SCO value for freshwater sediment of 3,600 mg/kg.
- Chrysene was also detected in one sample, SS-8-S1, at a concentration of 0.0053 mg/kg, below the total PAH SCO value for freshwater sediment of 17 mg/kg.
- Arsenic, barium, chromium, copper, lead, nickel, selenium, and silver were also detected in the samples analyzed at concentrations below applicable SCO values for freshwater sediment.
- Mercury was detected in one sample, SS-1-S1, at a concentration of 0.051 mg/kg, below the SCO value for freshwater sediment of 0.66 mg/kg.
- All other analytes were not detected at or above laboratory reporting limits in the samples analyzed.

During the second sediment sampling attempt in October 2022, 12 sediment samples were collected for chemical analysis (SS-1 through SS-6, SS-7a, and SS-8 through SS-12) and compared against the SCO. The following was observed:

- PAHs were detected in three samples (SS-8-0.5, SS-9-0.5, and SS-10-0.5) at concentrations below the total PAH SCO value for freshwater sediment of 17 mg/kg.
- Arsenic, barium, chromium, copper, lead, nickel, selenium, and silver were also detected in the samples analyzed at concentrations below applicable SCO values for freshwater sediment.
- All other analytes were not detected at or above laboratory reporting limits in the samples analyzed.

# 5. Conceptual Site Model

This section presents a conceptual site model (CSM) for the Site based on the data collected during the initial investigation of the Site, emergency IRA, and RI activities for the Site. The CSM identifies potential sources of contamination, contaminant fate and transport mechanisms/pathways, and potential receptor groups (human and ecological) and exposure pathways. Development of a CSM is dynamic and iterative and may be refined as additional information becomes available. The CSM is the basis for developing technically feasible cleanup alternatives and selecting a final cleanup as part of the FS process. The current CSM for the Site is discussed below and depicted in Figure 15.

### 5.1.1 Contaminant Sources and Release Mechanisms

Possible contaminant sources are from historical usage of petroleum products during the lumber mill operation from 1904 to sometime in the 1960s; unknown and former known leaking USTs (LUSTs), unknown and known UST piping, and petroleum-impacted soil associated with the former USTs; and possible unknown sources. During the 2019 initial investigation of the Site and emergency IRA protective cap excavation and construction, pipes and NAPL were discovered and appeared to be running in the direction of the seep areas. Additional pipes were discovered during RI activities near the location of the former UST site A and scattered throughout the area of the former lumber mill. An abandoned culvert with petroleum-like odor was observed in the drainage ravine directly to the north of the cap location during the emergency IRA. An additional SPP ledge and layer were observed north of the ravine and within the ravine, respectively.

## 5.2 CONTAMINANT FATE, TRANSPORT, AND EXPOSURE ROUTES

Possible contaminant transport routes from the Site were identified in the previous 2021 DSR. The primary transport mechanisms include leaching of chemicals in soil to groundwater, groundwater flow to surface water and sediment, stormwater runoff to soils and/or sediments, and soil erosion. The transport pathways could possibly result in exposures to ecological receptors within Rainey Creek and Riffe Lake, and potential human receptors via fish consumption and direct contact with contaminated soil or sediments. The following sections focus on the possible transport pathways and exposure routes from the Site.

The primary mechanisms likely to influence the fate and transport of chemicals at the Site include natural biodegradation of organic chemicals; sorption to soil and sediment; advection and dispersion in groundwater; volatilization of volatile chemicals from soil or groundwater to air; leaching of chemicals from soil to groundwater; and discharge of chemically impacted soil, groundwater, and sediment to surface water. The relative importance of these processes varies depending on the chemical and physical properties of the released contaminant. The properties of soil, sediment, and the dynamics of groundwater flow also affect contaminant fate and transport.

The fate and transport processes of heavy fuel oil depend on the composition of the contaminant and the environment affected by the contaminant. In general, when heavy fuel enters the environment, the individual products comprising the fuel partition to various environmental compartments according to their own physical-chemical properties (American Petroleum Institute, 2012).

The Site is partially vegetated and mostly unpaved, except for former mill structure concrete foundation slabs that are still visible. Therefore, the soil-to-groundwater migration pathway is complete for some analytes because of the potential for infiltration of precipitation through unpaved areas and through cracks in the former foundations into the vadose-zone soil. Leaching of near-surface soil impacts during precipitation events could result in impacts to shallow groundwater at the Site. In addition, transport parameters change dramatically when the Site is fully submerged. Lighter-than-water contamination will move vertically upward toward the water's surface when soil is fully saturated.

COCs identified to be present on the Site and discussed in Section 6.2 and their characteristics include the following:

- **TPH** refers to any mixture of hydrocarbons originating from crude oil. The mixture could include lighter fractions, such as gasoline and/or mineral spirits, as well as heavier fractions, such as diesel oils, hydraulic fluids, and lubricating oils. Most of the soil samples appear to contain petroleum hydrocarbon distributions similar to weathered Bunker C fuel. In areas dominated by gasoline-range hydrocarbons, the hydrocarbon distributions are more representative of a weathered mineral spirit-like product(s). Gasoline-range hydrocarbons generally fall within the C5-C13 carbon ranges and middle to heavy fuels/oils generally fall within the C8-C34 carbon ranges. After reviewing the EPH/VPH data (or historical TPH data), TPH detected in samples collected from locations TP-5, TP-44, TP-48, TP-49, TP-51, TP-55, and TP-59 appear to be heavily influenced by gasoline-range hydrocarbons. TPH can adsorb to soil particles, volatilize, and leach to and migrate in groundwater.
  - TPH results in shallow groundwater were flagged as not resembling the fuel standards used for quantitation and are likely associated with polar constituents such as petroleum metabolites (primarily from the aerobic biodegradation of petroleum) and natural organics. TPH-D and TPH-O were reported at concentrations exceeding typical aqueous solubilities for middle distillate fuels (e.g., diesel) or residual fuel oils (e.g., Bunker C). Given that the groundwater samples generally did not show any evidence of petroleum sheen or elevated turbidities, it is unlikely that the reported TPH-D and TPH-O detections in groundwater can be derived from middle to high molecular weight hydrocarbons. Furthermore, hydrocarbon concentrations reported in the EPH analyses, which utilize separation procedures that minimize the presence of polar constituents (silica gel cleanup), were typically much lower than the reported TPH-D+O concentrations. Individual PAHs and VOCs typically associated with petroleum products were also generally not encountered in the groundwater samples. The reported TPH detections (particularly in the diesel- and oil-ranges) are likely polar petroleum metabolites (e.g., organic acids, alcohols) and potentially natural organics.
- **Metals** occur naturally and can be deposited in the environment by anthropogenic means. They are dense compared to other common materials and are persistent in the environment. They do not degrade into nontoxic forms; however, they may be transformed into insoluble and biologically unavailable forms. Metals are transported primarily by being adsorbed on or absorbed in suspended particulate matter; therefore, soils and sediments are the most significant sink for metals. Certain metals (e.g., arsenic, lead, and mercury) can be bioaccumulative.
- **PAHs** are a group of organic compounds that are ubiquitous in the environment and are often associated with TPH. In general, PAHs do not dissolve easily in water and, because of their low solubilities, typically partition into sediments and soils versus into groundwater. Solubility and bioaccumulation potential vary among different PAH compounds.

## 5.3 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS

For a contaminant to present a risk to human health and/or the environment, the pathway from the contaminant to the receptor must be complete. A complete exposure pathway consists of four necessary elements: (1) a source and mechanism of chemical release; (2) a transport or retention medium for released chemical(s); (3) a point of potential contact with the impacted medium (referred to as exposure point); and (4) an exposure route (e.g., soil ingestion) at the exposure point. The potential receptors and exposure pathways are presented below.

The sediment pathway is currently incomplete; however, because the Site may be seasonally submerged in the future, potential pathways are present. Potential transport pathways are as follows.

**Soil**

- Direct contact of soil exposure pathway (complete);
- Soil leaching-to-groundwater transport pathway (complete);
- Soil leaching-to-groundwater-to-sediment transport pathway (currently incomplete, could be complete in the future); and
- Soil leaching-to-groundwater-to-surface water transport pathways (currently incomplete, could be complete in the future).
- Stormwater runoff to surface water/sediment transport pathway (currently incomplete, could be complete in the future).

**Groundwater**

- Groundwater-ingestion exposure pathway (currently incomplete, could be complete in the future);
- Groundwater-to-surface water transport pathway (currently incomplete, could be complete in the future); and
- Groundwater-to-sediment water transport pathway (currently incomplete, could be complete in the future).

**Sediment**

- Ingestion by humans of contaminated fish and shellfish exposed to contaminated sediment. Direct contact with and incidental ingestion of sediment by humans during shoreline recreation, clam-digging, net-fishing, etc.
- Benthic Community. Exposure of benthic species (species living in or on the sediment, including shellfish) through contact with, ingestion of, or filtration of contaminated sediment (currently incomplete, could be complete in the future).

### 5.3.1 Potential Exposure Scenarios

The primary purpose of the human health CSM is to identify potential receptor groups and to describe pathways by which those populations may be exposed to Site-related chemicals in the environment. Populations that may be exposed to contaminants at a Site and pathways by which these populations may come into contact with contaminants are identified. A complete pathway requires:

- A source and mechanism for release of constituents,
- A transport or retention medium,
- A potential environmental contact (exposure point) with the affected medium, and
- An exposure route at the exposure point.

The Property is currently vacant with signage and jersey barriers east of the Site; however, the Site will be accessible to the public as a recreational wildlife area, and this is expected to continue into the foreseeable future. The Site will be seasonally submerged in the future for recreation and to generate power at the Mossyrock Hydroelectric Dam, potentially changing the pathways for exposure and release.

Rainey Creek and Riffe Lake, which are directly adjacent to the Site and approximately 1,500 feet to the southwest, respectively, as well as the land on and around the Site provide habitat that have attracted recreational visitors in the past and most likely will in the future as well. Given the close proximity of Rainey Creek to the Site, there is potential for the COPCs to migrate downgradient of the suspected source area and impact sediment and surface water via stormwater runoff. However, COCs were not detected at concentrations above applicable screening levels in samples collected from the surface water and sediment in Rainey creek, this pathway is currently incomplete at the Site.

The CSM presented in this report is developed to ensure that all potentially significant pathways and receptors under current and reasonable future Site scenarios are evaluated. Based on the current (and potential future) Property use, the anticipated receptors may include construction workers and recreational users (including hunters and anglers). The following pathways are potentially complete for human exposure:

**Construction Workers** - Construction workers could potentially be exposed to chemicals in environmental media on the Site by the following pathways:

- Direct skin contact with or incidental ingestion of chemically impacted soil, sediment, or groundwater during excavations on the Site.
- Inhalation of wind-borne particulates on or migrating off Site from chemically impacted soil being handled or exposed on Site during excavations on the Site.
- Inhalation of outdoor air vapors emanating from soil, sediment, or groundwater with volatile chemical impacts on Site or migrating off the Site.

**Recreational Visitors and Anglers** - The Property and the surrounding area is currently closed with signs to recreational visitors stating “Area Closed, No Trespassing” indicating that the area is closed to the public and no trespassing is allowed with violators being subject to prosecution under RCW 9A.52.080. Property roads are gated and not readily accessible by vehicles; however, pedestrians could access the area. Riffe Lake is still accessible to the general public, who could be exposed to chemicals migrating to the water or from the subsurface soils by the following potential pathways:

- Direct skin contact with and incidental ingestion of surface water or sediment from Rainey Creek or Riffe Lake that has been chemically impacted via discharges of chemically impacted groundwater migrating off the Site.
- Ingestion of chemicals bioaccumulated in the tissue of fish from chemically impacted surface water or sediment in Rainey Creek and Riffe Lake. Anglers may fish near the Site by boat or from

accessible shoreline. Fish may be caught for personal consumption; fish tissue may bioaccumulate any chemicals present in sediment and surface water.

- Ingestion of chemicals bioaccumulated in terrestrial plants and/or animals from impacted soil at the Site.
- Direct skin contact with and/or incidental ingestion of chemically impacted soil near the seepage area.
- Inhalation of wind-borne particulates on or migrating off the Site from chemically impacted soil.
- Inhalation of outdoor air vapors emanating from soil or groundwater with volatile chemical impacts on or migrating off the Site.

**Surface Water and Sediment** - The Site and the surrounding area will be submerged in the future, creating new exposure pathways and receptors. When Riffe Lake submerges the Site, aquatic ecosystems and the general public could be exposed to chemicals migrating to the water or sediment by the following potential pathways:

- Human direct contact with surface water and sediment by recreational users and subsistence fishers.
- Direct contact with Riffe Lake surface water and sediment by aquatic ecological receptors (e.g., fish, invertebrates such as shellfish, birds, amphibians).
- Uptake of surface water/sediment contaminants into aquatic ecological species such as fish and shellfish (i.e., aquatic organism bioaccumulation), which then would be consumed as prey by humans.
- Uptake of surface water/sediment contaminants into aquatic ecological species, which then would be consumed as prey by upper-tropic-level aquatic ecological receptors.

**Terrestrial Wildlife** - There is potential for terrestrial wildlife to access the Property and be exposed to chemicals in the shallow surface soils by the following potential pathways:

- Direct contact with and/or ingestion of contaminated soil, sediments, or surface water through portions of the body contacting the ground, bathing, or through incidental contact with fugitive dust emissions from impacted areas.
- Inhalation of wind-borne particulates from chemically impacted soil.

## 5.4 TERRESTRIAL ECOLOGICAL EVALUATION

The TEE process is required at all MTCA sites where there has been a release or threatened release of a hazardous substance that may pose a threat to human health or the environment. The purpose of the TEE is to systematically organize and evaluate data, assumptions, and uncertainties to help understand and characterize potential risks to terrestrial biota that may be exposed to site-related constituents in a manner that supports decision-making.

For the purpose of this RI, the initial step of the TEE process to determine whether a site qualifies for a *TEE exclusion* was completed. If a site meets at least one of the four exclusionary criteria described in WAC 173-340-7491, then no further evaluation of ecological risk is necessary.

The four exclusionary criteria are:

1. *Exclusion 1: Contamination below the point of compliance*. This means all soil contamination shall be below the standard point of compliance of 15 feet bgs, or below the conditional point of compliance of 6 feet bgs. The conditional point of compliance may only be used in conjunction with institutional controls which would prevent excavation of deeper soils.
2. *Exclusion 2: Incomplete exposure pathway*. The primary pathway to soil for ecological receptors would be direct contact and ingestion. The pathway could be considered incomplete if there were barriers for plants or animals to contact soils (e.g., pavement, buildings, or protective cap).
3. *Exclusion 3: Type of contamination and proximity to ecological receptors*. For sites contaminated with hazardous substances other than those specified in WAC 173-340-7491, there must be less than 1.5 acres of contiguous undeveloped land on the site or within 500 feet of any area located on the site.
4. *Exclusion 4: Concentrations below background levels*. For certain naturally occurring contaminants, or for contaminated sites found in urban areas, there may be contamination that is not directly attributable to the site.

Evaluation of Exclusions:

1. Exclusion 1 does not apply to the Site. TPH and other constituents were detected between 0 and 15 feet bgs.
2. Exclusion 2 does not apply to the Site. While there are some former foundations, concrete slabs associated with the former mill operations at the Site, the physical barriers are discontinuous. Large areas of undeveloped lands are located at the Site.
3. Exclusion 3 does not apply to the Site. There is undeveloped land within 500 feet of the Site and the undeveloped land is greater than 1.5 acres.
4. Exclusion 4 does not apply to the Site. Some of the contaminants found in soils at the Site are not naturally occurring and are unlikely to be present from other sources.

The Site evaluated under this RI Report does not qualify for the exclusions under WAC 173 340. Once it has been established that none of the exclusionary criteria apply, either a simplified or Site-specific TEE is required. Chapter 173 340 7492 of the MTCA specifically refers to the process of determining the type of evaluation that is required (simplified or Site-specific) as “Applicability of a Simplified Terrestrial Ecological Evaluation”.

### 5.4.1 Applicability of a Simplified TEE

WAC 173-340-7492 lists out criteria that are to be used to determine whether a simplified TEE can be used. If any of the below criteria apply, then a Site-specific TEE is necessary. Those criteria are as follows:

1. *Natural area.* The Site is located on, or directly adjacent to, an area where management or land use plans will maintain or restore native or semi-native vegetation.
2. *Vulnerable species.* The Site is used by a threated or endangered species; a wildlife species classified by the Washington Department of Fish and Wildlife as a “priority species” or “species of concern” under Title 77 RCW; or a plant species classified by the Washington State Department of Natural Resources natural heritage program as “endangered,” “threatened,” or

"sensitive" under Title 79 RCW. For plants, "used" means that a plant species grows at the Site or has been found growing at the Site. For animals, "used" means that individuals of a species have been observed to live, feed, or breed at the Site.

3. *Extensive habitat.* The Site is located on a Property that contains at least 10 acres of native vegetation within 500 feet of the Site, not including vegetation beyond the Property boundaries.
4. *Risk to significant wildlife populations.* The department determines that the Site may present a risk to significant wildlife populations.

A simplified TEE is not appropriate for the Site since the Site is vegetated and the expected land use plans will maintain vegetation. Trees and understory vegetation are likely comprised of plants native to Washington state. Given that the Site is in a natural area that provides extensive habitat, a Site-specific TEE is required.

### 5.4.2 Site-Specific TEE

The Site-specific TEE process is designed to assess ecological risk at any site and to provide the basis for a CUL protective of terrestrial ecological receptors at the site, including sites with protected status species. Under WAC 173-340-7493, a site-specific TEE shall include the following steps:

- Problem formulation;
- Selection of appropriate evaluation method(s);
- Conducting the evaluation; and
- Establishing ecologically protective soil concentration.

For the purpose of this RI, as part of the problem-formulation step, the contaminants of ecological concern (CEC) were determined by comparing soil analytical data for the Site that is representative of current conditions (i.e., all data for soil that is currently in place) to ecological screening levels (SLs) presented in Table 749-3 of the MTCA regulation. Table 5.1, included in the Ecology's Draft Terrestrial Ecological Evaluation guidance document (Ecology, 2017), provides SL values for plants, soil biota, and wildlife for a group of selected analytes. In accordance with WAC 173 340-7493, for constituents that do not have a value published in Table 749-3, values from the literature should be obtained. Therefore, screening levels for soil biota, plants, and wildlife were obtained from the EPA Region 4 ecological soil screening level table (EPA, 2018). The Region 4 values are based on EPA Ecological Soil Screening Levels (EcoSSLs) and Department of Energy Laboratories (Los Alamos National Laboratory and Oak Ridge National Laboratory). MTCA specifically identifies the Oak Ridge National Laboratory values as values to be considered in the identification of screening levels.

Table H-1 (Appendix H) presents the analytical data for soil from 0 to 15 feet bgs and identifies individual concentrations that exceed the lowest screening level based on terrestrial wildlife protection. Although there is some uncertainty regarding future land use, it is anticipated that the Site will continue to be used for industrial purposes. Per WAC 173-340-7490 (3)(b), only terrestrial wildlife protection exposures need to be evaluated for commercial and industrial properties.

Table H-2 provides a summary of statistics for and comparison of maximum detected concentrations of constituents in soil 0 to 15 feet bgs to the screening levels. Table H-3 provides a summary of statistics for and comparison of maximum detected concentrations of constituents in soil 0 to 6 feet bgs to the

screening levels. Constituents detected at maximum concentrations above the SLs were initially retained as potential CECs. The full soil data set is reported in Table 4 of the RI Report.

As indicated in Tables H-2 and H-3, potential CECs based on terrestrial wildlife protection include cPAHs, phthalates, benzoic acid, TPH, and three metals. Because phthalates and benzoic acid detections were relatively infrequent and at estimated low concentrations that may be associated with sample handling, they were not retained as CECs.

One of the objectives of this RI is to analyze Site data to support an evaluation of potential cleanup actions. The comparison of soil data to ecological screening concentrations indicates widespread impacts of multiple CECs through the Site. Petroleum and metal exceedances of TEE-based screening levels will likely drive the need and scope of soil remediation.

# 6. Identification of Contaminants of Concern and Proposed Cleanup Standards

The following sections describe how contaminants of potential concern (COPCs) and Site COCs were identified, establishment of proposed cleanup standards, the distribution of COCs in soil and groundwater relative to proposed cleanup standards, and identification of data gaps.

## 6.1 CONTAMINANTS OF POTENTIAL CONCERN IDENTIFICATION PROCESS

### 6.1.1 Identification of Chemicals of Potential Concern

Identification of COPCs involved comparing the concentrations of the constituents to conservative, risk-based screening levels. Screening levels for each medium and constituent reflect concentrations that are protective for the possible transport and exposure pathways identified in the CSM (*Section 5*). Screening levels are shown in Tables 4 through 7.

Those constituents whose concentration in a sample from the supplemental RI data set exceeded their corresponding screening levels were identified as COPCs.

#### *6.1.1.1 Soil*

Soil screening levels were based on the following.

- Direct contact, vadose or saturated zone soil leaching to potable groundwater, soil leaching to groundwater followed by transport to surface water, soil leaching to groundwater followed by partitioning to sediment, and erosion of contaminated soil directly to sediment or soil carried by soil directly to sediment or soil carried by surface runoff and deposited to sediment.
- SCOs for the protection of Benthic organisms.
- MTCA Ecological Indicator Soil Concentrations for Protection of Terrestrial Animals (Table 749-3).
- In cases where the practical quantitation limit (PQL) is higher than the direct contact, leaching, or ecological levels, the PQL is used as the screening level in accordance with WAC 173-340-740(5)(c).

Table 4 shows the comparisons of the concentrations in soil for each constituent to the lowest applicable screening level and identifies those constituents where there is an exceedance (i.e., those constituents that are COPCs). The following constituents were identified as COPCs in soil:

- TPH
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- 2-Chlorotoluene
- 2-Phenylbutane (sec-Butylbenzene)
- 4-Chlorotoluene

- Benzene
- Cymene (p-Isopropyltoluene)
- Ethylbenzene
- Hexane
- Isopropylbenzene (Cumene)
- Methylene chloride (Dichloromethane)
- n-Propylbenzene
- PCE
- TCE
- Xylene (Total)
- 1-Methylnaphthalene
- 2-Methylnaphthalene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Chrysene
- cPAHs-TEQ
- Dibenz(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene, Total
- Pyrene
- Arsenic
- Cadmium
- Chromium VI (Hexavalent)
- Copper
- Lead
- Mercury
- Nickel
- Zinc

#### *6.1.1.2 Groundwater*

Groundwater screening levels were based on the following.

- Protection of groundwater water calculated by identifying maximum contaminant levels and calculating screening levels per MTCA Equations 720-1 and 720-2, (WAC 173-340-720[4][b][iii][A] and -720[4][b][iii][B]) and Equations 730-1 and 730-2 (WAC 173-340-730[3][b][iii][A] and -720[3][b][iii][B]) using the toxicity values in Ecology's online CULs and risk calculation database (Ecology, 2025). Screening levels that were based on maximum contaminant levels or other applicable state or federal laws were then adjusted as needed so that the total excess cancer risk does not exceed one in one hundred thousand and the hazard index does not exceed one in accordance with WAC 173-340-720(7)(b).

Table 5 shows the comparisons of the concentration in groundwater for each constituent to the lowest applicable screening level and identifies those constituents where there is an exceedance (i.e., those constituents that are COPCs). The following constituents were identified as COPCs in groundwater:

- TPH-D+O
- 1-Methylnaphthalene
- Fluoranthene
- Pyrene
- Lead
- Copper

### 6.2 IDENTIFICATION OF CONTAMINANTS OF CONCERN

COCs comprise the subset of COPCs that will be utilized for establishing cleanup requirements for the Site and evaluating cleanup alternatives in the FS. Those COPCs that contribute little or nothing to the overall risk to human health and the environment are screened out from consideration and the remaining constituents are identified as COCs for purposes of defining Site cleanup requirements.

Factors that were considered when identifying COCs include a constituent's toxicity, mobility in the environment, natural background concentration, and prevalence at the Site (e.g., frequency of detection).

#### *6.2.1.1 Soil*

Of the soil COPCs identified in Section 6.1.1, the following constituents are **not** retained as COCs for soil:

- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- 2-Chlorotoluene
- 2-Phenylbutane (sec-Butylbenzene)
- 4-Chlorotoluene
- Benzene

- Cymene (p-Isopropyltoluene)
- Ethylbenzene
- Hexane
- Isopropylbenzene (Cumene)
- Methylene chloride
- n-Propylbenzene
- PCE
- TCE
- Xylene (Total)
- 2-Methylnaphthalene
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Chrysene
- Dibenz(a,h)anthracene
- Fluorene
- Fluoranthene
- Indeno(1,2,3-cd)pyrene
- Arsenic
- Cadmium
- Chromium VI (Hexavalent)
- Copper
- Mercury
- Nickel

**1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-chlorotoluene, 2-phenylbutane (sec-butylbenzene), 4-chlorotoluene, benzene, cymene (p-isopropyltoluene), ethylbenzene, hexane, isopropylbenzene (cumene), n-propylbenzene, and xylene (total).** These constituents were identified as COPCs because their maximum concentrations exceeded their respective screening levels for the protection of potable groundwater, surface water via groundwater, and/or sediment via groundwater in the saturated or vadose zones. However, they are not retained as COCs in soil because they were not detected in groundwater at or above laboratory reporting limits or were detected at concentrations below their respective applicable screening levels indicating that the soil-to-groundwater pathway is not complete for these constituents.

**PCE and TCE.** PCE and TCE were identified as a COPC because their maximum concentration exceeded the screening levels for the protection of potable groundwater, surface water via groundwater, and/or sediment via groundwater in the saturated or vadose zones. However, they are not retained as a proposed COC in soil because there is no known source of PCE and TCE at the Site and they were not

detected in groundwater, indicating that the soil-to-groundwater pathway is not complete for these constituents.

**2-methylnaphthalene, benzo(a)anthracene, benzo(b)fluoranthene, chrysene, dibenz(a,h)anthracene, fluorene, and indeno(1,2,3-cd)pyrene.** These constituents were identified as COPCs because their maximum concentrations exceeded the screening levels for the protection of potable groundwater, surface water via groundwater, and/or sediment via groundwater in the saturated or vadose zones. However, they are not retained as COCs in soil because they were not detected in groundwater or were detected at concentrations below their respective applicable screening levels, indicating that the soil-to-groundwater pathway is not complete for these constituents.

**Methylene chloride.** Methylene chloride was identified as a COPC because its maximum concentration exceeded the most stringent PCUL for the protection of potable groundwater in the vadose zone. However, it is not retained as a proposed COC in soil because the detections were flagged as being due to laboratory contamination (methylene chloride is frequently used for cleaning equipment in the laboratory).

**Hexavalent chromium.** Hexavalent chromium was identified as a COPC because its maximum concentration exceeded the most stringent PCUL for the protection of potable groundwater in the vadose zone. However, it is not retained as a proposed COC in soil because there is no known source of hexavalent chromium at the Site and it was not detected in groundwater, indicating that the soil-to-groundwater pathway is not complete for this constituent. In addition, total chromium concentrations were within soil natural background indicating that there are no significant anthropogenic sources of chromium at the Site.

**Arsenic, cadmium, and nickel.** These constituents were identified as COPCs because their maximum concentrations exceeded applicable soil screening levels. However, they are not retained as COCs in soil because they were detected at concentrations exceeding the natural background concentration in less than 10 percent of the samples analyzed and the maximum detected concentrations were less than two times the natural background concentration (WAC 173-340-720).

**Copper.** Copper was identified as a COPC because its maximum concentration exceeded applicable soil screening levels. Copper was not retained as a Site COC for the following reasons.

- There is no known (or likely) source of copper based on reviewing historical data and Site use.
- No obvious copper hotspots have been observed at the Site (i.e., heterogenous distribution with no apparent plume to delineate).
- Copper concentrations in B-15 exceed background levels from 12.5 to 40 feet bgs. There is no evidence historical operations impacted soil that deep.
- The soil to groundwater and soil to groundwater to surface water pathways are incomplete because dissolved copper was not detected in any of the groundwater samples collected from the monitoring wells during the quarterly groundwater sampling; therefore, the more stringent screening levels (the protection of potable groundwater and surface water via groundwater) are not applicable.
- The next most conservative applicable soil screening level is for the protection of wildlife, which has a screening level of 217 mg/kg. The maximum soil copper concentration of 116 mg/kg is well below this screening level.

Based on the evaluations presented above, the COCs for soil are:

- TPH
- 1-Methylnaphthalene
- Benzo(a)pyrene
- cPAH-TEQ
- Fluoranthene
- Pyrene
- Lead
- Zinc

#### *6.2.1.2 Groundwater*

Of the groundwater COPCs identified in *Section 6.1.2*, the following constituents are **not** retained as COCs for groundwater:

- Copper
- Lead

**Copper.** This constituent is not retained as a proposed COC because it does not pose a significant risk. This is based on the findings that it had a very low frequency of exceedance (total copper was detected at concentrations exceeding in only two groundwater samples [MW-1S from May 2023, MW-3S from May 2023, and MW-4D from August 2023]), a low exceedance factor (less than two times the most stringent screening level). Dissolved copper was not detected at or above laboratory reporting limits in any of the samples analyzed from the monitoring wells. Furthermore, copper was detected at concentrations less than applicable MTCA screening levels in soil, indicating there is no release at the Site and elevated concentrations in some samples are due to natural concentrations.

**Lead.** This constituent is not retained as a proposed COC because it does not pose a significant risk. This is based on the findings that it had a very low frequency of exceedance (exceeded in only three groundwater samples [MW-1D from August 2023, MW-3S from May 2023, and MW-4D from August 2023]), and a generally low exceedance factor (average of 1.5 times the most stringent screening level). The sample collected from MW-3S was detected at a concentration greater than two times the most stringent screening level; however, the turbidity measured was measured at 100.3 nephelometric turbidity units prior to collecting, indicating the sample may be positively biased due to the presence of particulates. Dissolved lead was not detected at or above laboratory reporting limits in any of the samples analyzed from the monitoring wells.

Based on the evaluations presented above, the COCs for groundwater are:

- TPH-D+O
- 1-Methylnaphthalene
- Fluoranthene
- Pyrene

## 6.3 PROPOSED CLEANUP LEVELS

For the purposes of this RI, COCs comprise the subset of COPCs that will be utilized for establishing cleanup requirements for the Site and evaluating cleanup alternatives in the FS. Proposed cleanup standards for COCs by media are shown on Tables 8 and 9, below.

The MTCA Method B CULs for the protection of direct contact and the most stringent cleanup level for the protection of potable groundwater, surface water via groundwater, and sediment via groundwater are used. Metals were compared to the Ecology derived natural background concentrations, if the natural background concentrations exceeded the most stringent applicable cleanup level. TPH was compared to MTCA Method B soil cleanup level for the protection of groundwater quality: leaching pathway. Because the Site does not qualify for a TEE exclusion and will likely be used for utility/commercial uses in the future, MTCA Ecological Indicator Soil Concentrations for Protection of Terrestrial Animals (Table 749-3) are also used as proposed CULs. Furthermore, because the Site will be submerged for part of the year in the future, soil COCs were also compared to freshwater sediment management standards. For groundwater COCs, MTCA Method B CULs for the protection of drinking water, surface water, and sediment are used.

Proposed points of compliance (POC) for this Site are the standard points of compliance for soil and groundwater in accordance with WAC 173-340-740(6) and WAC 173-340-720(8)(b), which are described in the following section.

Tables 8 and 9 summarize the proposed soil and groundwater cleanup levels, respectively, selected for the Site COCs.

| Table 8 - Proposed Soil Cleanup Standards in mg/kg | | | | | | |
|---|---|---|---|---|---|---|
| **Contaminant of Concern** | **Proposed Site Cleanup Levels** | **Most Stringent Cleanup Level for the Protection of Potable Groundwater, Surface Water via Groundwater, and Sediment via Groundwater in Vadose/Saturated Zone Soil** | **Direct Contact** | **Site-Specific Terrestrial Ecological Evaluation (Commercial/ Industrial)** | **SMS Lower Tier Freshwater Benthic SCOs** | **Natural Background Concentrations** |
| TPH[1] | 1,000/550[2] | 1,000/550 | 2,200 | NA | NA | NA |
| TPH[1] | 1,000/30 | 1,000/30[3] | 1,500 | NA | NA | NA |
| TPH-D | 340 | NA | NA | 6,000 | 340 | NA |
| Benzo(a)pyrene | 0.1875[4] | 0.0003/0.000015 | 0.1875 | 12 | NA | NA |
| fluoranthene | 0.02/0.001 | 0.02/0.0010 | 3,200 | NA | NA | NA |
| pyrene | 0.02/0.0015 | 0.02/0.0010 | 2,400 | NA | NA | NA |
| 1-Methylnapht halene | 0.0468/0.0024 | 0.0468/0.0024 | 19.6 | NA | NA | NA |
| cPAH-TEQ | 0.19[4] | 0.084/0.0042 | 0.19 | NA | NA | NA |
| Lead[4] | 118 | 250/21 | 250 | 118 | 360 | 10.9 |
| Zinc[4] | 360 | 29.9/1.49 | 24,000 | 360 | 3,200 | 85.6 |

***Notes:***

1. *TPH value is the sum of TPH-G, TPH-D, and TPH-O*
2. *The proposed cleanup level is the calculated Site-Specific Screening Level for soil where mixed-range petroleum hydrocarbons are the primary constituent.*
3. *The proposed cleanup level is the calculated Site-Specific Screening Level for soil where gasoline-range petroleum hydrocarbons are the primary constituent*
4. *The soil to groundwater pathway is incomplete, thus the next most stringent applicable cleanup level is listed.*

| Table 9 - Proposed Groundwater Cleanup Standards in µg/L | |
|---|---|
| **Contaminant of Concern** | **Project Cleanup Levels[1]** |
| TPH-D+TPH-O | 500 |
| fluoranthene | 0.02 |
| pyrene | 0.015 |
| 1-Methylnaphthalene | 1.5 |

***Notes:***

1. *The Project Cleanup Levels are the most stringent values for the protection of groundwater, sediment, and surface water.*

## 6.4 NATURE AND EXTENT OF CONTAMINATION

This section describes the apparent extent of contaminated media discovered at the Site in soil and groundwater and is illustrated in Figures 16 and 17, respectively.

### 6.4.1 Soil

Analytical results from samples collected from soil borings and test pits to date indicate that COCs were detected above applicable screening levels up to 18 feet bgs. TPH exceeding Site-specific CUL was generally observed in the upper 5 to 18 feet bgs to the east of the cap and along the concrete pad

leading away from the concrete foundations to the west of Site A from the 1992 cleanup (Figure 17). Furthermore, EPH and VPH results indicated that there are three areas where soil is primarily impacted by petroleum hydrocarbons in the gasoline-range and differed from the rest of the Site (Figure 16). TPH was not detected at or above the Site-specific CUL in soil samples collected at or below 20 feet bgs. TPH detections and exceedances are shown in Figure 10.

Select PAHs were detected above applicable screening levels and were generally observed in the upper 5 to 10 feet where TPH exceedances were also observed. PAH COC detections and exceedances are shown in Figure 12 and were generally observed in the upper 5 to 18 feet bgs, along corresponding TPH detections exceeding the Site-specific CUL.

Zinc and/or lead concentrations detected above applicable screening levels and the Ecology-derived natural background concentrations were generally observed in the upper 5 to 10 in the drainage ravine area, around the former site 'A', and to the west of the former site 'A'.

### 6.4.2 Groundwater

Exceedances above proposed cleanup levels were observed in the shallow monitoring wells only (groundwater was generally observed between 5 to 15 feet bgs in the upland area). TPH-D+O was detected above the proposed cleanup level in the shallow wells sampled during the June 2022 (all four monitoring wells exceeded for TPH-D and TPH-O), February 2023 (MW-1S, MW-2S, and MW-3S exceeded for TPH-D and TPH-O), and May 2023 (MW-2s and MW-3S exceeded for TPH-D and TPH-O; and MW-1S and MW-4S exceeded TPH-O only) monitoring events. Other analytes were not detected at or above laboratory reporting limits or were detected at concentrations below applicable screening levels.

As discussed in Section 5.2, the TPH-D and TPH-O detections and exceedances in shallow groundwater appear to be heavily influenced by polar metabolites and may also be influenced by natural organics. As petroleum biodegrades in groundwater and moves away from the source, the percentage of polar metabolites tends to increase, and the toxicity of the overall mixture tends to decrease (Ecology, 2023c). Because silica cleanup was not applied to samples, the whole petroleum mixture is compared to screening levels. Additional characterization of the relative contributions of polar petroleum metabolites and natural organics could be evaluated as part of future pre-remedial design investigations.

For the deep monitoring wells and the grab groundwater samples collected in 2022 (groundwater was generally observed between 36 and 47 feet bgs in the upland area), the analytes were either not detected at or above laboratory reporting limits or were detected below applicable proposed CULs.

### 6.4.3 Sediment

Sediment samples were only collected and analyzed during the 2022 investigation and did not exceed applicable SCOs (Table 7, Figure 14).

Two soil samples from the creek bank (Creekbed1 and LB-2) exceeded applicable cleanup levels for TPH-D, TPH-O, and cPAHs, and the analyses from the sediment samples collected in 2022 were either not detected at or above laboratory reporting limits or were detected below applicable SCOs, indicating that the protective cap is functioning as intended.

# 7. Summary and Conclusions

Results of soil and groundwater sampling conducted in the upland area at the Site during the 2019 initial investigation and 2022 through 2025 RI indicate the presence of TPH, cPAHs, benzo(a)pyrene, fluoranthene, pyrene, 1-methylnaphthalene, and zinc in soil at concentrations above proposed CULs primarily in near-surface soils (generally in the upper 10 to 18 feet bgs).

Petroleum associated with historic Bunker C and mineral spirit-like product impacted near-surface soils across an area of approximately 1 acre, generally within the upper 10 feet bgs. However, petroleum impacts associated with historic Bunker C and/or mineral-spirit like product has been detected up to 14 feet bgs in one test pit. Petroleum associated with gasoline-range petroleum hydrocarbons impacted soils across an area of approximately 0.3 acres, up to a depth of approximately 18 feet bgs.

TPH-D+O, fluoranthene, pyrene, 1-methylnaphthalene were detected in shallow groundwater above proposed CULs; COCs were either not detected or detected at concentrations below applicable CULs in all groundwater samples collected in deeper wells and in the grab-groundwater samples, except for the grab groundwater sample collected from B-11 and total copper, lead, and/or mercury during the August 2023 sampling event. However, dissolved metals were either not detected at or above laboratory reporting limits or were detected at concentrations below applicable screening levels.

Groundwater impacts appear to be generally limited to polar petroleum metabolites that resulted from the degradation of historic petroleum releases. The highest concentrations of petroleum and polar metabolites were generally observed in monitoring wells MW-2S and MW-3S. To determine the extent of petroleum versus polar metabolite concentrations and natural organics in shallow groundwater, additional groundwater samples could be collected and analyzed for NWTPH-Dx with and without silica gel cleanup. The additional data can be used to potentially revise the proposed TPH groundwater cleanup levels to adjust for the presence of natural organics and establish cleanup levels for petroleum hydrocarbons and polar metabolites.

All constituents analyzed in sediment and surface water samples in 2022 were not detected at or above laboratory reporting limits or were detected at concentrations below applicable CULs or benchmark levels.

The data, multiple lines of evidence, and conclusions presented in this report are sufficient to complete a FS and select a proposed cleanup alternative for the draft cleanup action plan. The primary objective for the FS and draft cleanup action plan is to identify and evaluate the most relevant remedial alternative that reduces contaminant exposure to levels that are protective to human health and the environment posed by the COCs. This will be addressed in a future FS report.

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# TABLES

**TABLE 1**
**SUMMARY OF SURFACE WATER QUALITY DATA COLLECTED BY TACOMA POWER**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name | Action Level | | Debris Ravine | SPP Ledge | Debris Outlet | Debris Ravine | Rainey Creek | Rainey Creek | Bank Cap | Conveyance Outfall | Stockpile | SH1-22 | SH2-22 | SH4-22 | SH5-22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | WQPP Indicator Lake (Lake Elevation >720 ft) | WQPP Indicator Riverine (Lake Elevation <720 ft) | Debris_Ravine_ 20210713 | SPP_Ledge _20210713 | 20210804_ Debris_Outlet | 20210804_ Debris_Ravine | 20211004_ Rainey_Creek | 20211013_ Rainey_Creek | 20211108_ Bank_Cap | 20211123_ Conveyance | 20211123_ Stockpile | SH1-22 Sample 1 | SH2-22 Sample 4 | SH4-22 Sample 2 | SH5-22 Sample 3 |
| Sample Date | | | 07/13/2021 | 07/13/2021 | 08/04/2021 | 08/04/2021 | 10/04/2021 | 10/13/2021 | 11/08/2021 | 11/23/2021 | 11/23/2021 | 01/31/2022 | 03/29/2022 | 02/17/2022 | 02/17/2022 |
| Riffe Lake Elevation (ft) | | | 736.61 | 736.61 | 741.81 | 741.81 | 721.99 | 718.11 | 722.95 | 745.77 | 745.77 | 738.53 | 732.54 | 727.2 | 727.2 |
| **Volatile Organic Compounds (µg/L)** | | | | | | | | | | | | | | | |
| Benzene | NA | NA | 1 U | 1 U | 1 U | 1 U | 0.0732 U | 0.0732 U | 1 U | 0.2 U | 0.2 UH | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Ethylbenzene | NA | NA | 1 U | 1 U | 1 U | 1 U | 0.0625 U | 0.0625 U | 1 U | 0.2 U | 0.2 UH | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| m,p-Xylenes | NA | NA | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| o-Xylene | NA | NA | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Toluene | NA | NA | 1 U | 1 U | 1 U | 1 U | 0.293 U | 0.293 U | 1 U | **0.07** | **0.06 JH** | 0.2 U | **0.7** | **0.3 J** | 0.2 U |
| Total BTEX | 2 | 2 | -- | -- | 1.83 U | -- | 1.33 U | 1.33 U | 5 U | -- | 1.1 U | 1.2 U | 1.2 U | 1.2 U | 1.2 U |
| Xylene (Total) | NA | NA | 2 U | 2 U | 2 U | 2 U | 0.897 U | 0.897 U | 2 U | 0.6 U | 0.6 UH | -- | -- | -- | -- |
| **Semi-Volatile Organic Compounds (µg/L)** | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 23.4 | 23.4 | 0.948 U | 1 U | 0.943 U | 0.943 U | -- | 1.1 U | 0.962 U | 0.96 U | 1.0417 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Benzo(a)pyrene | 7.5 | 7.5 | 0.948 U | 1 U | 0.943 U | 0.943 U | -- | 1.1 U | 0.962 U | 0.96 U | 1.0417 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Benzo(b)fluoranthene | 14.4 | 14.4 | 0.948 U | 1 U | 0.943 U | 0.943 U | -- | 1.1 U | 0.962 U | 0.96 U | 1.0417 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(k)fluoranthene | 7.5 | 7.5 | 0.948 U | 1 U | 0.943 U | 0.943 U | -- | 1.1 U | 0.962 U | 0.96 U | 1.0417 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Chrysene | 7.5 | 7.5 | 0.948 U | 1 U | 0.943 U | 0.943 U | -- | 1.1 U | 0.962 U | 0.96 U | 1.0417 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Indeno(1,2,3-cd)pyrene | 11.1 | 11.1 | 0.948 U | 1 U | 0.943 U | 0.943 U | -- | 1.1 U | 0.962 U | 0.96 U | 1.0417 U | 0.6 U | 0.6 U | 0.6 U | 0.6 U |
| Pyrene | 5.7 | 5.7 | 0.948 U | 1 U | 0.943 U | 0.943 U | -- | 1.1 U | 0.962 U | 0.96 U | 1.0147 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| **Total Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | | | | | | |
| Diesel Range Organics | 250 | 250 | **52.6** | 50 U | 50 U | **84.3** | 94.3 U- | -- | -- | -- | -- | 240 UJ | **125 J** | 260 UJ | 152 UJ |
| Gasoline Range Organics | 250 | 250 | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 100 U | 100 U | 100 UH | **8.17 J** | 50 U | 50 U | 50 U |
| Total Petroleum Hydrocarbon – Oil | 250 | 250 | **285 *** | 50 U | 50 U | 50 U | **392-** | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Petroleum Hydrocarbons | 250 | 250 | -- | -- | -- | -- | -- | **108** | **95** | **1.35** | 0.105 U | -- | -- | -- | -- |
| **Inorganic Compounds (µg/L)** | | | | | | | | | | | | | | | |
| Arsenic | 360 | 360 | 0.3 U | 0.3 U | 0.3 U | **0.6** | 0.3 U | 0.3 U | 1 U | 1 U | 1 U | **0.279 J** | **2.65** | **7.9** | **0.249 J** |
| Cadmium | 1 | 1.5 | 0.2 U | 0.2 U | 0.2 U | **0.4** | 0.2 U | 0.2 U | 1 U | 1 U | 1 U | 0.1 U | 0.1 U | **0.704** | 0.1 U |
| Chromium | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | -- | -- | 1 U | -- | -- | 1.54 U | **2.2** | **10** | **2.35** |
| Chromium VI (Hexavalent) | 15 | 15 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 UH | -- | -- | -- | -- |
| Copper | 5 | 7.2 | **5.5** | **1.5** | **0.9** | **19.5** | **0.8** | **1.1** | **2.04** | **5.77** | **2.55** | **8.79** | **3.64** | **36.8** | **4.75** |
| Lead | 15.1 | 23.5 | **1** | 0.5 U | 0.5 U | **8.8** | 0.5 U | 0.5 U | 1 U | 1 U | 1 U | **0.971** | **0.346 J** | **20.9** | **0.155 J** |
| Nickel | 467.5 | 652 | 0.5 U | 0.5 U | 0.5 U | **10.6** | 0.5 U | 0.5 U | 1 U | 1 U | 1 U | **0.72** | **0.65** | **14.8** | **0.767** |
| Zinc | 37.7 | 52.7 | **39.4** | **3.7** | 0.3 U | **320** | **0.7** | **0.8** | **2.64** | **13.8** | **3.27** | **13.3** | **12.3** | **126** | **4.72 J** |
| Mercury, Total | 2.1 | 2.1 | 0.5 U | 0.5 U | -- | -- | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | -- | -- | -- | -- |
| Mercury, Dissolved | 2.1 | 2.1 | -- | -- | 0.5 U | 0.5 U | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Other** | | | | | | | | | | | | | | | |
| Hardness (µg/L) | NA | NA | **21700** | **20300** | **19500** | **57000** | -- | -- | **31900** | -- | **23200** | -- | -- | -- | -- |

***Notes:***

***Bold*** *values indicate a detected concentration.*

*Blue shading indicates a detected analyte concentration exceeding a WQPP standard.*

*--: Not Analyzed*

*-: surrogate recovery was less than the lower control limit; associated results have a potential low bias.*

**: sample contains heavy oil range organics that do not resemble heavy oil reference pattern*

*µg/L: micrograms per Liter*

*J: value is an estimate*

*H: hold time exceeded*

*NA: No Action level available*

*U: not detected, value is the laboratory method detection limit*

*WQPP: Water Quality Protection Plan*

**TABLE 2**
**MONITORING WELL CONSTRUCTION DETAILS AND GROUNDWATER ELEVATIONS**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Monitoring Well | Completion Date | Groundwater Measurement Date | TOM Elevation (ft TCL) | TOC | Total Depth (ft bgs) | Casing Diameter (in) | Screen Length (ft) | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Screen Elevation (ft TCL) | Bottom of Screen Elevation (ft TCL) | Depth to Water (ft below TOC) | Groundwater Elevation (ft TCL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1S | 6/27/2022 | 6/29/2022 | 757.25 | 756.87 | 20 | 2 | 10 | 5 | 15 | 751.87 | 741.87 | 5.00 | 751.87 |
| | | 8/10/2022 | | | | | | | | | | 10.43 | 746.44 |
| | | 8/16/2022 | | | | | | | | | | 11.48 | 745.39 |
| | | 8/25/2022 | | | | | | | | | | 13.02 | 743.85 |
| | | 9/1/2022 | | | | | | | | | | 14.47 | 742.40 |
| | | 9/6/2022 | | | | | | | | | | 15.12 | 741.75 |
| | | 9/15/2022 | | | | | | | | | | 15.12 | 741.75 |
| | | 9/22/2022 | | | | | | | | | | 15.12 | 741.75 |
| | | 9/29/2022 | | | | | | | | | | 15.12 | 741.75 |
| | | 10/6/2022 | | | | | | | | | | 15.12 | 741.75 |
| | | 10/11/2022 | | | | | | | | | | 15.09 | 741.78 |
| | | 10/18/2022 | | | | | | | | | | 15.12 | 741.75 |
| | | 10/24/2022 | | | | | | | | | | 15.12 | 741.75 |
| | | 10/31/2022 | | | | | | | | | | N/A | N/A |
| | | 11/7/2022 | | | | | | | | | | 11.71 | 745.15 |
| | | 11/15/2022 | | | | | | | | | | 9.58 | 747.29 |
| | | 11/21/2022 | | | | | | | | | | 11.12 | 745.74 |
| | | 11/28/2022 | | | | | | | | | | 11.68 | 745.19 |
| | | 12/5/2022 | | | | | | | | | | 11.12 | 745.74 |
| | | 12/12/2022 | | | | | | | | | | 8.99 | 747.88 |
| | | 12/19/2022 | | | | | | | | | | 10.04 | 746.83 |
| | | 12/27/2022 | | | | | | | | | | 9.38 | 747.48 |
| | | 1/3/2023 | | | | | | | | | | N/A | N/A |
| | | 1/10/2023 | | | | | | | | | | 8.17 | 748.70 |
| | | 1/17/2023 | | | | | | | | | | 9.15 | 747.71 |
| | | 1/25/2023 | | | | | | | | | | 8.53 | 748.34 |
| | | 2/1/2023 | | | | | | | | | | 9.48 | 747.38 |
| | | 2/7/2023 | | | | | | | | | | 9.97 | 746.89 |
| | | 2/16/2023 | | | | | | | | | | 8.20 | 748.66 |
| | | 2/23/2023 | | | | | | | | | | 7.28 | 749.58 |
| | | 3/2/2023 | | | | | | | | | | 9.35 | 747.52 |
| | | 3/8/2023 | | | | | | | | | | 8.92 | 747.94 |
| | | 3/15/2023 | | | | | | | | | | 5.18 | 751.68 |
| | | 3/23/2023 | | | | | | | | | | 9.02 | 747.84 |
| | | 3/28/2023 | | | | | | | | | | 9.12 | 747.75 |
| | | 4/6/2023 | | | | | | | | | | 9.02 | 747.84 |
| | | 4/19/2023 | | | | | | | | | | 7.87 | 748.99 |
| | | 4/28/2023 | | | | | | | | | | 7.41 | 749.45 |
| | | 5/2/2023 | | | | | | | | | | 8.43 | 748.43 |
| | | 5/8/2023 | | | | | | | | | | 9.78 | 747.09 |
| | | 5/16/2023 | | | | | | | | | | 10.63 | 746.24 |
| | | 6/2/2023 | | | | | | | | | | 11.94 | 744.92 |
| | | 6/13/2023 | | | | | | | | | | 15.52 | 741.35 |
| | | 6/26/2023 | | | | | | | | | | 13.48 | 743.38 |
| | | 7/11/2023 | | | | | | | | | | 14.99 | 741.87 |
| | | 7/24/2023 | | | | | | | | | | 14.99 | 741.87 |
| MW-1D | 10/31/2022 | 11/15/2022 | 757.217 | 756.72 | 60 | 2 | 20 | 38 | 58 | 719.22 | 698.72 | 37.53 | 719.18 |
| | | 11/21/2022 | | | | | | | | | | 36.25 | 720.46 |
| | | 11/28/2022 | | | | | | | | | | 36.45 | 720.27 |
| | | 12/5/2022 | | | | | | | | | | 36.25 | 720.46 |
| | | 12/12/2022 | | | | | | | | | | 37.50 | 719.22 |
| | | 12/19/2022 | | | | | | | | | | 38.06 | 718.66 |
| | | 12/27/2022 | | | | | | | | | | 37.47 | 719.25 |
| | | 1/3/2022 | | | | | | | | | | N/A | N/A |
| | | 1/10/2023 | | | | | | | | | | 36.75 | 719.97 |
| | | 1/17/2023 | | | | | | | | | | 36.68 | 720.04 |
| | | 1/25/2023 | | | | | | | | | | 36.88 | 719.84 |
| | | 2/1/2023 | | | | | | | | | | 37.43 | 719.28 |
| | | 2/7/2023 | | | | | | | | | | 37.73 | 718.99 |
| | | 2/16/2023 | | | | | | | | | | 37.99 | 718.72 |
| | | 2/23/2023 | | | | | | | | | | 38.06 | 718.66 |
| | | 3/2/2023 | | | | | | | | | | 38.64 | 718.08 |
| | | 3/8/2023 | | | | | | | | | | 38.62 | 718.10 |
| | | 3/15/2023 | | | | | | | | | | 38.68 | 718.04 |
| | | 3/23/2023 | | | | | | | | | | 38.75 | 717.97 |
| | | 3/28/2023 | | | | | | | | | | 38.88 | 717.84 |

**TABLE 2**
**MONITORING WELL CONSTRUCTION DETAILS AND GROUNDWATER ELEVATIONS**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Monitoring Well | Completion Date | Groundwater Measurement Date | TOM Elevation (ft TCL) | TOC | Total Depth (ft bgs) | Casing Diameter (in) | Screen Length (ft) | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Screen Elevation (ft TCL) | Bottom of Screen Elevation (ft TCL) | Depth to Water (ft below TOC) | Groundwater Elevation (ft TCL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1D | 10/31/2022 | 4/6/2023 | 757.217 | 756.72 | 60 | 2 | 20 | 38 | 58 | 719.22 | 698.72 | 39.04 | 717.68 |
| | | 4/19/2023 | | | | | | | | | | 38.75 | 717.97 |
| | | 4/28/2023 | | | | | | | | | | 38.52 | 718.20 |
| | | 5/2/2023 | | | | | | | | | | 37.99 | 718.72 |
| | | 5/8/2023 | | | | | | | | | | 37.73 | 718.99 |
| | | 5/16/2023 | | | | | | | | | | 31.66 | 725.06 |
| | | 6/2/2023 | | | | | | | | | | 16.14 | 740.58 |
| | | 6/13/2023 | | | | | | | | | | 16.99 | 739.72 |
| | | 6/26/2023 | | | | | | | | | | 21.62 | 735.10 |
| | | 7/11/2023 | | | | | | | | | | 25.26 | 731.45 |
| | | 7/24/2023 | | | | | | | | | | 27.20 | 729.52 |
| | | 8/15/2023 | | | | | | | | | | 31.43 | 725.29 |
| MW-2S | 6/27/2022 | 6/29/2022 | 758.327 | 757.88 | 20.0 | 2 | 10 | 5 | 15 | 753.33 | 742.88 | 5.32 | 752.56 |
| | | 8/10/2022 | | | | | | | | | | 9.06 | 748.82 |
| | | 8/16/2022 | | | | | | | | | | 9.65 | 748.23 |
| | | 8/25/2022 | | | | | | | | | | 10.83 | 747.05 |
| | | 9/1/2022 | | | | | | | | | | 11.55 | 746.33 |
| | | 9/6/2022 | | | | | | | | | | 11.91 | 745.97 |
| | | 9/15/2022 | | | | | | | | | | 12.43 | 745.45 |
| | | 9/22/2022 | | | | | | | | | | 12.93 | 744.95 |
| | | 9/29/2022 | | | | | | | | | | 13.29 | 744.59 |
| | | 10/6/2022 | | | | | | | | | | 13.58 | 744.30 |
| | | 10/11/2022 | | | | | | | | | | 13.78 | 744.10 |
| | | 10/18/2022 | | | | | | | | | | 13.81 | 744.07 |
| | | 10/24/2022 | | | | | | | | | | 14.44 | 743.44 |
| | | 10/31/2022 | | | | | | | | | | 12.96 | 744.92 |
| | | 11/7/2022 | | | | | | | | | | 12.96 | 744.92 |
| | | 11/15/2022 | | | | | | | | | | 13.68 | 744.20 |
| | | 11/21/2022 | | | | | | | | | | 8.60 | 749.28 |
| | | 11/28/2022 | | | | | | | | | | 7.84 | 750.04 |
| | | 12/5/2022 | | | | | | | | | | 8.60 | 749.28 |
| | | 12/12/2022 | | | | | | | | | | 5.15 | 752.73 |
| | | 12/19/2022 | | | | | | | | | | 6.76 | 751.12 |
| | | 12/27/2022 | | | | | | | | | | 6.10 | 751.77 |
| | | 1/3/2023 | | | | | | | | | | 3.90 | 753.97 |
| | | 1/10/2023 | | | | | | | | | | 5.05 | 752.82 |
| | | 1/17/2023 | | | | | | | | | | 5.54 | 752.33 |
| | | 1/25/2023 | | | | | | | | | | 5.28 | 752.59 |
| | | 2/1/2023 | | | | | | | | | | 5.94 | 751.94 |
| | | 2/7/2023 | | | | | | | | | | 6.56 | 751.32 |
| | | 2/16/2023 | | | | | | | | | | 5.38 | 752.50 |
| | | 2/23/2023 | | | | | | | | | | 4.33 | 753.55 |
| | | 3/2/2023 | | | | | | | | | | 5.41 | 752.46 |
| | | 3/8/2023 | | | | | | | | | | 5.05 | 752.82 |
| | | 3/15/2023 | | | | | | | | | | 4.99 | 752.89 |
| | | 3/23/2023 | | | | | | | | | | 6.56 | 751.32 |
| | | 3/28/2023 | | | | | | | | | | 5.87 | 752.00 |
| | | 4/6/2023 | | | | | | | | | | 5.15 | 752.73 |
| | | 4/19/2023 | | | | | | | | | | 4.92 | 752.96 |
| | | 4/28/2023 | | | | | | | | | | 4.36 | 753.51 |
| | | 5/2/2023 | | | | | | | | | | 5.61 | 752.27 |
| | | 5/8/2023 | | | | | | | | | | 7.19 | 750.69 |
| | | 5/16/2023 | | | | | | | | | | 8.73 | 749.15 |
| | | 6/2/2023 | | | | | | | | | | 10.47 | 747.41 |
| | | 6/13/2023 | | | | | | | | | | 10.14 | 747.74 |
| | | 6/26/2023 | | | | | | | | | | 11.71 | 746.16 |
| | | 7/11/2023 | | | | | | | | | | 12.80 | 745.08 |
| | | 7/24/2023 | | | | | | | | | | 13.39 | 744.49 |
| MW-2D | 10/31/2022 | 11/15/2022 | 758.217 | 757.63 | 60.0 | 2 | 20 | 38 | 58 | 720.22 | 699.63 | 37.53 | 720.09 |
| | | 11/21/2022 | | | | | | | | | | 36.25 | 721.37 |
| | | 11/28/2022 | | | | | | | | | | 36.45 | 721.18 |
| | | 12/5/2022 | | | | | | | | | | 36.25 | 721.37 |
| | | 12/12/2022 | | | | | | | | | | 37.50 | 720.13 |
| | | 12/19/2022 | | | | | | | | | | 38.06 | 719.57 |
| | | 12/27/2022 | | | | | | | | | | 37.47 | 720.16 |
| | | 1/3/2022 | | | | | | | | | | N/A | N/A |

**TABLE 2**
**MONITORING WELL CONSTRUCTION DETAILS AND GROUNDWATER ELEVATIONS**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Monitoring Well | Completion Date | Groundwater Measurement Date | TOM Elevation (ft TCL) | TOC | Total Depth (ft bgs) | Casing Diameter (in) | Screen Length (ft) | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Screen Elevation (ft TCL) | Bottom of Screen Elevation (ft TCL) | Depth to Water (ft below TOC) | Groundwater Elevation (ft TCL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-2D | 10/31/2022 | 1/10/2023 | 758.217 | 757.63 | 60.0 | 2 | 20 | 38 | 58 | 720.22 | 699.63 | 36.75 | 720.88 |
| | | 1/17/2023 | | | | | | | | | | 36.68 | 720.95 |
| | | 1/25/2023 | | | | | | | | | | 36.88 | 720.75 |
| | | 2/1/2023 | | | | | | | | | | 37.43 | 720.19 |
| | | 2/7/2023 | | | | | | | | | | 37.73 | 719.90 |
| | | 2/16/2023 | | | | | | | | | | 37.99 | 719.63 |
| | | 2/23/2023 | | | | | | | | | | 38.06 | 719.57 |
| | | 3/2/2023 | | | | | | | | | | 38.64 | 718.99 |
| | | 3/8/2023 | | | | | | | | | | 38.62 | 719.01 |
| | | 3/15/2023 | | | | | | | | | | 38.68 | 718.95 |
| | | 3/23/2023 | | | | | | | | | | 38.75 | 718.88 |
| | | 3/28/2023 | | | | | | | | | | 38.88 | 718.75 |
| | | 4/6/2023 | | | | | | | | | | 39.04 | 718.59 |
| | | 4/19/2023 | | | | | | | | | | 38.75 | 718.88 |
| | | 4/28/2023 | | | | | | | | | | 38.52 | 719.11 |
| | | 5/2/2023 | | | | | | | | | | 37.99 | 719.63 |
| | | 5/8/2023 | | | | | | | | | | 37.73 | 719.90 |
| | | 5/16/2023 | | | | | | | | | | 31.66 | 725.97 |
| | | 6/2/2023 | | | | | | | | | | 16.14 | 741.49 |
| | | 6/13/2023 | | | | | | | | | | 16.99 | 740.63 |
| | | 6/26/2023 | | | | | | | | | | 21.62 | 736.01 |
| | | 7/11/2023 | | | | | | | | | | 25.26 | 732.36 |
| | | 7/24/2023 | | | | | | | | | | 27.20 | 730.43 |
| | | 8/15/2023 | | | | | | | | | | 31.43 | 726.20 |
| MW-3S | 6/27/2022 | 6/29/2022 | 756.66 | 756.18 | 20.0 | 2 | 10 | 5 | 15 | 751.66 | 741.18 | 4.69 | 751.49 |
| | | 8/10/2022 | | | | | | | | | | 9.28 | 746.90 |
| | | 8/16/2022 | | | | | | | | | | 10.20 | 745.98 |
| | | 8/25/2022 | | | | | | | | | | 11.38 | 744.80 |
| | | 9/1/2022 | | | | | | | | | | 12.43 | 743.75 |
| | | 9/6/2022 | | | | | | | | | | 12.89 | 743.29 |
| | | 9/15/2022 | | | | | | | | | | 13.55 | 742.63 |
| | | 9/22/2022 | | | | | | | | | | 14.24 | 741.94 |
| | | 9/29/2022 | | | | | | | | | | 14.50 | 741.68 |
| | | 10/6/2022 | | | | | | | | | | 14.80 | 741.38 |
| | | 10/11/2022 | | | | | | | | | | 14.80 | 741.38 |
| | | 10/18/2022 | | | | | | | | | | 14.83 | 741.35 |
| | | 10/24/2022 | | | | | | | | | | 14.99 | 741.19 |
| | | 10/31/2022 | | | | | | | | | | 7.28 | 748.90 |
| | | 11/7/2022 | | | | | | | | | | 7.28 | 748.90 |
| | | 11/15/2022 | | | | | | | | | | 6.79 | 749.39 |
| | | 11/21/2022 | | | | | | | | | | 7.28 | 748.90 |
| | | 11/28/2022 | | | | | | | | | | 9.55 | 746.63 |
| | | 12/5/2022 | | | | | | | | | | 7.28 | 748.90 |
| | | 12/12/2022 | | | | | | | | | | 7.25 | 748.93 |
| | | 12/19/2022 | | | | | | | | | | 14.40 | 741.78 |
| | | 12/27/2022 | | | | | | | | | | 7.68 | 748.50 |
| | | 1/3/2023 | | | | | | | | | | 5.84 | 750.34 |
| | | 1/10/2023 | | | | | | | | | | 10.76 | 745.42 |
| | | 1/17/2023 | | | | | | | | | | 11.91 | 744.27 |
| | | 1/25/2023 | | | | | | | | | | 9.65 | 746.53 |
| | | 2/1/2023 | | | | | | | | | | 10.89 | 745.29 |
| | | 2/7/2023 | | | | | | | | | | 11.81 | 744.37 |
| | | 2/16/2023 | | | | | | | | | | 10.04 | 746.14 |
| | | 2/23/2023 | | | | | | | | | | 9.68 | 746.50 |
| | | 3/2/2023 | | | | | | | | | | 9.84 | 746.34 |
| | | 3/8/2023 | | | | | | | | | | 8.83 | 747.35 |
| | | 3/15/2023 | | | | | | | | | | 6.46 | 749.72 |
| | | 3/23/2023 | | | | | | | | | | 14.27 | 741.91 |
| | | 3/28/2023 | | | | | | | | | | 12.96 | 743.22 |
| | | 4/6/2023 | | | | | | | | | | 9.38 | 746.80 |
| | | 4/19/2023 | | | | | | | | | | 10.79 | 745.39 |
| | | 4/28/2023 | | | | | | | | | | 7.94 | 748.24 |
| | | 5/2/2023 | | | | | | | | | | 13.71 | 742.47 |
| | | 5/8/2023 | | | | | | | | | | 14.37 | 741.81 |
| | | 5/16/2023 | | | | | | | | | | 14.53 | 741.65 |
| | | 6/2/2023 | | | | | | | | | | 13.06 | 743.12 |

**TABLE 2**
**MONITORING WELL CONSTRUCTION DETAILS AND GROUNDWATER ELEVATIONS**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Monitoring Well | Completion Date | Groundwater Measurement Date | TOM Elevation (ft TCL) | TOC | Total Depth (ft bgs) | Casing Diameter (in) | Screen Length (ft) | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Screen Elevation (ft TCL) | Bottom of Screen Elevation (ft TCL) | Depth to Water (ft below TOC) | Groundwater Elevation (ft TCL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-3S | 6/27/2022 | 6/13/2023 | 756.66 | 756.18 | 20.0 | 2 | 10 | 5 | 15 | 751.66 | 741.18 | 13.94 | 742.24 |
| | | 6/26/2023 | | | | | | | | | | 14.67 | 741.51 |
| | | 7/11/2023 | | | | | | | | | | 14.67 | 741.51 |
| | | 7/24/2023 | | | | | | | | | | 14.67 | 741.51 |
| MW-3D | 10/27/2022 | 11/15/2022 | 756.77 | 756.42 | 56.0 | 2 | 20 | 36 | 56 | 720.77 | 700.42 | 37.70 | 718.72 |
| | | 11/21/2022 | | | | | | | | | | 36.81 | 719.61 |
| | | 11/28/2022 | | | | | | | | | | 36.78 | 719.64 |
| | | 12/5/2022 | | | | | | | | | | 36.81 | 719.61 |
| | | 12/12/2022 | | | | | | | | | | 37.37 | 719.05 |
| | | 12/19/2022 | | | | | | | | | | 38.02 | 718.40 |
| | | 12/27/2022 | | | | | | | | | | 36.61 | 719.81 |
| | | 1/3/2022 | | | | | | | | | | 37.01 | 719.41 |
| | | 1/10/2023 | | | | | | | | | | 37.07 | 719.35 |
| | | 1/17/2023 | | | | | | | | | | 36.94 | 719.48 |
| | | 1/25/2023 | | | | | | | | | | 37.11 | 719.31 |
| | | 2/1/2023 | | | | | | | | | | 37.34 | 719.08 |
| | | 2/7/2023 | | | | | | | | | | 37.40 | 719.02 |
| | | 2/16/2023 | | | | | | | | | | 37.73 | 718.69 |
| | | 2/23/2023 | | | | | | | | | | 37.66 | 718.76 |
| | | 3/2/2023 | | | | | | | | | | 38.15 | 718.27 |
| | | 3/8/2023 | | | | | | | | | | 38.12 | 718.30 |
| | | 3/15/2023 | | | | | | | | | | 38.16 | 718.26 |
| | | 3/23/2023 | | | | | | | | | | 38.16 | 718.26 |
| | | 3/28/2023 | | | | | | | | | | 38.39 | 718.03 |
| | | 4/6/2023 | | | | | | | | | | 38.42 | 718.00 |
| | | 4/19/2023 | | | | | | | | | | 38.22 | 718.20 |
| | | 4/28/2023 | | | | | | | | | | 38.02 | 718.40 |
| | | 5/2/2023 | | | | | | | | | | 37.83 | 718.59 |
| | | 5/8/2023 | | | | | | | | | | 37.47 | 718.95 |
| | | 5/16/2023 | | | | | | | | | | 31.63 | 724.79 |
| | | 6/2/2023 | | | | | | | | | | 16.11 | 740.31 |
| | | 6/13/2023 | | | | | | | | | | 17.19 | 739.23 |
| | | 6/26/2023 | | | | | | | | | | 21.92 | 734.50 |
| | | 7/11/2023 | | | | | | | | | | 25.59 | 730.83 |
| | | 7/24/2023 | | | | | | | | | | 27.69 | 728.73 |
| | | 8/15/2023 | | | | | | | | | | 32.44 | 723.98 |
| MW-4S | 6/27/2022 | 6/29/2022 | 757.149 | 756.73 | 20.0 | 2 | 10 | 6 | 16 | 751.15 | 740.73 | 5.86 | 750.87 |
| | | 8/10/2022 | | | | | | | | | | 9.51 | 747.22 |
| | | 8/16/2022 | | | | | | | | | | 10.20 | 746.53 |
| | | 8/25/2022 | | | | | | | | | | 11.61 | 745.12 |
| | | 9/1/2022 | | | | | | | | | | 12.34 | 744.39 |
| | | 9/6/2022 | | | | | | | | | | 12.86 | 743.87 |
| | | 9/15/2022 | | | | | | | | | | 13.48 | 743.25 |
| | | 9/22/2022 | | | | | | | | | | 14.07 | 742.66 |
| | | 9/29/2022 | | | | | | | | | | 15.03 | 741.70 |
| | | 10/6/2022 | | | | | | | | | | 15.94 | 740.79 |
| | | 10/11/2022 | | | | | | | | | | 15.94 | 740.79 |
| | | 10/18/2022 | | | | | | | | | | 15.94 | 740.79 |
| | | 10/24/2022 | | | | | | | | | | 15.94 | 740.79 |
| | | 10/31/2022 | | | | | | | | | | 14.96 | 741.77 |
| | | 11/7/2022 | | | | | | | | | | 14.96 | 741.77 |
| | | 11/15/2022 | | | | | | | | | | 11.02 | 745.71 |
| | | 11/21/2022 | | | | | | | | | | 10.70 | 746.03 |
| | | 11/28/2022 | | | | | | | | | | 10.27 | 746.46 |
| | | 12/5/2022 | | | | | | | | | | 10.70 | 746.03 |
| | | 12/12/2022 | | | | | | | | | | 7.84 | 748.89 |
| | | 12/19/2022 | | | | | | | | | | 9.55 | 747.18 |
| | | 12/27/2022 | | | | | | | | | | 7.25 | 749.48 |
| | | 1/3/2023 | | | | | | | | | | 6.23 | 750.50 |
| | | 1/10/2023 | | | | | | | | | | 6.69 | 750.04 |
| | | 1/17/2023 | | | | | | | | | | 6.76 | 749.97 |
| | | 1/25/2023 | | | | | | | | | | 7.58 | 749.15 |
| | | 2/1/2023 | | | | | | | | | | 8.40 | 748.33 |
| | | 2/7/2023 | | | | | | | | | | 8.76 | 747.97 |
| | | 2/16/2023 | | | | | | | | | | 7.51 | 749.22 |
| | | 2/23/2023 | | | | | | | | | | 7.22 | 749.51 |

**TABLE 2**
**MONITORING WELL CONSTRUCTION DETAILS AND GROUNDWATER ELEVATIONS**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Monitoring Well | Completion Date | Groundwater Measurement Date | TOM Elevation (ft TCL) | TOC | Total Depth (ft bgs) | Casing Diameter (in) | Screen Length (ft) | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Screen Elevation (ft TCL) | Bottom of Screen Elevation (ft TCL) | Depth to Water (ft below TOC) | Groundwater Elevation (ft TCL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-4S | 6/27/2022 | 3/2/2023 | 757.149 | 756.73 | 20.0 | 2 | 10 | 6 | 16 | 751.15 | 740.73 | 7.87 | 748.85 |
| | | 3/8/2023 | | | | | | | | | | 7.68 | 749.05 |
| | | 3/15/2023 | | | | | | | | | | 6.82 | 749.90 |
| | | 3/23/2023 | | | | | | | | | | 8.69 | 748.03 |
| | | 3/28/2023 | | | | | | | | | | 8.53 | 748.20 |
| | | 4/6/2023 | | | | | | | | | | 7.68 | 749.05 |
| | | 4/19/2023 | | | | | | | | | | 7.74 | 748.99 |
| | | 4/28/2023 | | | | | | | | | | 6.73 | 750.00 |
| | | 5/2/2023 | | | | | | | | | | 7.28 | 749.45 |
| | | 5/8/2023 | | | | | | | | | | 9.02 | 747.71 |
| | | 5/16/2023 | | | | | | | | | | 9.91 | 746.82 |
| | | 6/2/2023 | | | | | | | | | | 11.22 | 745.51 |
| | | 6/13/2023 | | | | | | | | | | 13.94 | 742.79 |
| | | 6/26/2023 | | | | | | | | | | 12.53 | 744.20 |
| | | 7/11/2023 | | | | | | | | | | 14.11 | 742.62 |
| | | 7/24/2023 | | | | | | | | | | 15.55 | 741.18 |
| MW-4D | 10/28/2022 | 11/15/2022 | 756.946 | 756.68 | 57.0 | 2 | 20 | 37 | 57 | 719.95 | 699.68 | 35.96 | 720.72 |
| | | 11/21/2022 | | | | | | | | | | 37.73 | 718.95 |
| | | 11/28/2022 | | | | | | | | | | 37.66 | 719.01 |
| | | 12/5/2022 | | | | | | | | | | 37.73 | 718.95 |
| | | 12/12/2022 | | | | | | | | | | 38.12 | 718.55 |
| | | 12/19/2022 | | | | | | | | | | 38.42 | 718.26 |
| | | 12/27/2022 | | | | | | | | | | 37.96 | 718.72 |
| | | 1/3/2022 | | | | | | | | | | 38.16 | 718.52 |
| | | 1/10/2023 | | | | | | | | | | 37.73 | 718.95 |
| | | 1/17/2023 | | | | | | | | | | 37.76 | 718.91 |
| | | 1/25/2023 | | | | | | | | | | 37.86 | 718.82 |
| | | 2/1/2023 | | | | | | | | | | 38.06 | 718.62 |
| | | 2/7/2023 | | | | | | | | | | 38.19 | 718.49 |
| | | 2/16/2023 | | | | | | | | | | 38.35 | 718.32 |
| | | 2/23/2023 | | | | | | | | | | 38.22 | 718.45 |
| | | 3/2/2023 | | | | | | | | | | 38.71 | 717.96 |
| | | 3/8/2023 | | | | | | | | | | 38.71 | 717.96 |
| | | 3/15/2023 | | | | | | | | | | 38.71 | 717.96 |
| | | 3/23/2023 | | | | | | | | | | 38.71 | 717.96 |
| | | 3/28/2023 | | | | | | | | | | 38.75 | 717.93 |
| | | 4/6/2023 | | | | | | | | | | 38.94 | 717.73 |
| | | 4/19/2023 | | | | | | | | | | 38.75 | 717.93 |
| | | 4/28/2023 | | | | | | | | | | 38.55 | 718.13 |
| | | 5/2/2023 | | | | | | | | | | 38.39 | 718.29 |
| | | 5/8/2023 | | | | | | | | | | 38.22 | 718.45 |
| | | 5/16/2023 | | | | | | | | | | 31.92 | 724.75 |
| | | 6/2/2023 | | | | | | | | | | 16.31 | 740.37 |
| | | 6/13/2023 | | | | | | | | | | 17.68 | 738.99 |
| | | 6/26/2023 | | | | | | | | | | 22.31 | 734.37 |
| | | 7/11/2023 | | | | | | | | | | 29.23 | 727.44 |
| | | 7/24/2023 | | | | | | | | | | 28.08 | 728.59 |
| | | 8/15/2023 | | | | | | | | | | 32.97 | 723.71 |

***Notes:***

*bgs = below ground surface*

*ft = feet*

*in = inches*

*TCL: Tacoma City Light Datum*

*TOC: top of well casing*

*TOM: top of monument*

**TABLE 3**
**SUMMARY OF FIELD SCREENING AND CHEMICAL ANALYSIS SAMPLE SELECTION**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Sample ID | Depth | PID (ppm) | Odor | Sheen | Dx | Gx | BTEX | EPH/VPH | PAHs | VOCs | Total Metals | Cr6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B11-S1-5 | 4-6 | 0.3 | SO | NS | X | X | | | X | X | X | |
| B11-S1D | | | | | X | X | | X | X | X | X | |
| B11-S2-10 | 9-10 | 0.2 | NO | NS | | | | | | | | |
| B11-S3-15 | 12.5-15 | 0.4 | NO | NS | X | X | | X | X | X | X | |
| B11-S4-20 | 17.5-20 | 0.3 | NO | NS | | | | | | | | |
| B11-S5-25 | 22.5-25 | 0.3 | NO | NS | | | | | | | | |
| B11-S6-30 | 27.5-30 | 0.1 | NO | NS | | | | | | | | |
| B11-S7-35 | 32.5-35 | 0.3 | NO | NS | X | X | | | X | X | X | |
| B11-S8-40 | 37.5-40 | 0.3 | NO | NS | | | | | | | | |
| B11-S9-45 | 42.5-45 | 0.2 | NO | NS | | | | | | | | |
| B11-S10-50 | 47.5-50 | 0.2 | NO | NS | X | X | | | X | X | X | |
| B12-S1-5 | 2.5-5 | 0.2 | SO | SS | X | X | | | X | X | X | |
| B12-S2-7 | 5-7.5 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B12-S3-15 | 12.5-15 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B12-S4-20 | 17.5-20 | 0.2 | NO | NS | X | X | | | X | X | X | |
| B12-S5-25 | 22.5-25 | 0.2 | NO | NS | | | | | | | | |
| B12-S6-30 | 27.5-30 | 0.1 | NO | NS | | | | | | | | |
| B12-S7-35 | 32.5-35 | 0.1 | NO | NS | | | | | | | | |
| B12-S8-40 | 37.5-40 | 0.1 | NO | NS | | | | | | | | |
| B12-S9-45 | 42.5-45 | <0.1 | NO | NS | | | | | | | | |
| B12-S10-50 | 47.5-50 | <0.1 | NO | NS | X | X | | | X | X | X | |
| B-13-S1-5 | 1-3 | <0.1 | NO | NS | X | X | | X | X | X | X | |
| B13-S2-10 | 10-11 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B13-S3-15 | 14-15 | 0.1 | NO | NS | | | | | | | | |
| B13-S4-20 | 17.5-20 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B13-S5-25 | 22.5-25 | <0.1 | NO | NS | | | | | | | | |
| B13-S6-30 | 27.5-30 | 0.2 | NO | NS | | | | | | | | |
| B13-S7-35 | 32.5-35 | 0.1 | NO | NS | | | | | | | | |
| B13-S8-40 | 37.5-40 | 0.1 | NO | NS | | | | | | | | |
| B13-S9-45 | 42.5-45 | 0.1 | NO | NS | | | | | | | | |
| B13-S10-50 | 47.5-50 | 0.1 | NO | NS | X | X | | X | X | X | X | |
| B14-S1-5 | 2-4 | <0.1 | OO | NS | X | X | | | X | X | X | |
| B14-S2-10 | 10-11 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B14-S3-15 | 14-15 | 0.1 | NO | NS | | | | | | | | |
| B14-S4-19 | 18-19 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B14-S5-25 | 22.5-25 | 0.1 | NO | NS | | | | | | | | |
| B14-S6-28 | 27-28 | 0.1 | NO | NS | | | | | | | | |
| B14-S7-35 | 32.5-35 | 0.1 | NO | NS | | | | | | | | |
| B14-S8-40 | 37.5-40 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B14-S9-45 | 42.5-45 | 0.1 | NO | NS | | | | | | | | |
| B14-S10-50 | 47.5-50 | 0.2 | NO | NS | | | | | | | | |
| B15-S1-5 | 2.5-5 | 0.10 | NO | NS | X | X | | | X | X | X | |
| B15-S2-15 | 5-7.5 | <0.1 | NO | NS | X | X | | | X | X | X | |
| B15-S3-20 | 12.5-15 | <0.1 | NO | NS | X | X | | | X | X | X | |
| B15-S4-25 | 17.5-20 | 0.2 | NO | NS | X | X | | | X | X | X | |
| B15-S5-30 | 22.5-25 | <0.1 | NO | NS | | | | | | | | |
| B15-S6-35 | 27.5-30 | 0.1 | NO | NS | | | | | | | | |
| B15-S7-40 | 32.5-35 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B15-S8-45 | 37.5-40 | <0.1 | NO | NS | | | | | | | | |
| B15-S9-50 | 42.5-45 | <0.1 | NO | NS | | | | | | | | |
| B16-S1-5 | 2-4 | 0.2 | NO | NS | X | X | | | X | X | X | |
| B16-S2-7 | 6-7 | 0.2 | SO | NS | X | X | | | X | X | X | |
| B16-S3-15 | 12.5-15 | 0.2 | NO | NS | X | X | | | X | X | X | |
| B16-S4-20 | 17.5-20 | 0.4 | NO | NS | | | | | | | | |
| B16-S5-25 | 22.5-25 | 0.3 | NO | NS | X | X | | | X | X | X | |
| B16-S6-30 | 27.5-30 | 0.3 | NO | NS | | | | | | | | |
| B16-S7-35 | 32.5-35 | 0.3 | NO | NS | | | | | | | | |
| B16-S8-40 | 37.5-40 | 0.2 | NO | NS | | | | | | | | |
| B16-S9-45 | 42.5-45 | 0.2 | NO | NS | | | | | | | | |
| B16-S10-50 | 47.5-50 | 0.3 | NO | NS | X | X | | | X | X | X | |
| B17-S1-5 | 2-4 | 0.2 | OO | OS | X | X | | | X | X | X | |
| B17-S1D | 2-4 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B17-S2-7 | 6-7 | 0.1 | NO | NS | | | | | | | | |
| B17-S3-15 | 12.5-15 | 0.1 | NO | NS | X | X | | | X | X | X | |

**TABLE 3**
**SUMMARY OF FIELD SCREENING AND CHEMICAL ANALYSIS SAMPLE SELECTION**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Sample ID | Depth | PID (ppm) | Odor | Sheen | Dx | Gx | BTEX | EPH/VPH | PAHs | VOCs | Total Metals | Cr6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B17-S4-20 | 17.5-20 | 0.1 | NO | NS | | | | | | | | |
| B17-S5-25 | 22.5-25 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B17-S6-30 | 27.5-30 | 0.1 | NO | NS | | | | | | | | |
| B17-S7-35 | 32.5-35 | 0.1 | NO | NS | | | | | | | | |
| B17-S8-40 | 37.5-40 | 0.1 | NO | NS | X | X | | | X | X | X | |
| B17-S9-45 | 42.5-45 | 0 | NO | NS | | | | | | | | |
| B17-S10-50 | 47.5-50 | <0.1 | NO | NS | | | | | | | | |
| MW1S-S1 | 2-4 | 0.6 | NO | NS | X | X | X | | | | | |
| MW1S-S2 | 7-9 | 0.6 | MO | SS | X | X | | X | X | X | X | X |
| MW1S-S3 | 12-14 | 1.4 | NO | NS | X | X | | X | X | X | X | X |
| MW1S-S4 | 18-19 | 0.4 | NO | NS | X | X | X | | | | | |
| MW1D-S1-5 | 2.5-5 | 0.2 | NO | NS | X | X | | X | | X | | |
| MW1D-S2-10 | 7.5-10 | 0.3 | NO | NS | X | X | | | X | X | X | |
| MW1D-S3-15 | 12.5-15 | 0.2 | NO | NS | X | X | | | | X | | |
| MW1D-S4-20 | 17.5-20 | 0.1 | NO | NS | X | X | | | X | X | X | |
| MW1D-S5-25 | 22.5-25 | 0.1 | NO | NS | | | | | | | | |
| MW1D-S6-30 | 27.5-30 | 0.2 | NO | NS | | | | | | | | |
| MW1D-S7-35 | 32.5-35 | 0.1 | NO | NS | | | | | | | | |
| MW1D-S8-40 | 37.5-40 | 0.2 | NO | NS | | | | | | | | |
| MW1D-S9-45 | 42.5-45 | 0.3 | NO | NS | X | X | | | | X | | |
| MW1D-S10-50 | 47.5-50 | 0.2 | NO | NS | | | | | | | | |
| MW1D-S11-55 | 52.5-55 | 0.2 | NO | NS | | | | | | | | |
| MW1D-S12-60 | 57.5-60 | 0.1 | NO | NS | | | | | | | | |
| MW-2S-S1 | 2-3 | 0.9 | NO | NS | X | X | | | | | | |
| MW-2S-S2 | 7-9 | 0.6 | MO | NS | X | X | | X | X | X | X | X |
| MW-2S-S3 | 11-3 | 0.5 | NO | NS | X | X | | X | X | X | X | X |
| MW-2S-S4 | 28-20 | 0.4 | NO | NS | X | X | | | | | | |
| MW2D-S1-5 | 2.5-5 | 3.8 | MO | SS | X | X | | X | X | X | X | |
| MW2D-S1-5-DUP | 2.5-5 | 3.8 | MO | SS | X | X | | X | X | X | X | |
| MW2D-S2-10 | 7.5-10 | 0.9 | MO | SS | X | X | | X | X | X | X | |
| MW2D-S3-15 | 12.5-15 | 0.3 | NO | NS | X | X | | | X | X | | |
| MW2D-S4-20 | 17.5-20 | 0.2 | NO | NS | X | X | | | X | X | X | |
| MW2D-S5-25 | 22.5-25 | 0.3 | NO | NS | | | | | | | | |
| MW2D-S6-30 | 27.5-30 | 0.2 | NO | NS | | | | | | | | |
| MW2D-S7-35 | 32.5-35 | 0.3 | NO | NS | | | | | | | | |
| MW2D-S8-40 | 37.5-40 | 0.3 | NO | NS | X | X | | X | X | X | | |
| MW2D-S9-45 | 42.5-45 | 0.2 | NO | NS | | | | | | | | |
| MW2D-S10-50 | 47.5-50 | 0.1 | NO | NS | | | | | | | | |
| MW2D-S11-55 | 52.5-55 | 0.2 | NO | NS | | | | | | | | |
| **MW3S-S1** | 3-4 | 1.9 | MO | SS | X | X | X | X | X | X | X | X |
| MW-3S-S2 | 7-9 | 38.6 | MO | MS | X | X | X | X | X | X | X | X |
| **MW-3S-S200** | | | | | X | X | X | X | X | X | X | X |
| MW-3S-S3 | 12-13 | 1.8 | NO | NS | X | X | X | X | X | X | X | X |
| MW-3S-S4 | 18-19 | 1.7 | NO | NS | X | X | X | | | | | |
| **MW3D-S1-5** | 2.5-5 | 3.9 | MO | SS | X | X | | X | X | X | X | |
| **MW3D-S2-10** | 7.5-10 | 15.1 | HO | SS | X | X | | X | X | X | X | |
| MW3D-S3-15 | 12.5-15 | 0.3 | NO | NS | X | X | | | X | X | | |
| MW3D-S4-20 | 17.5-20 | 0.2 | NO | SS | X | X | | X | X | X | | |
| MW3D-S5-25 | 22.5-25 | 0.3 | NO | NS | X | X | | | X | X | X | |
| MW3D-S6-30 | 27.5-30 | 0.2 | NO | NS | | | | | | | | |
| MW3D-S7-35 | 32.5-35 | 0.2 | NO | NS | | | | | | | | |
| MW3D-S8-40 | 37.5-40 | 0.3 | NO | NS | | | | | | | | |
| MW3D-S9-45 | 42.5-45 | 0.2 | NO | NS | | | | | | | | |
| MW3D-S10-50 | 47.5-50 | 0.2 | NO | NS | | | | | | | | |
| MW3D-S11-55 | 52.5-55 | 0.3 | NO | NS | X | X | | | | X | | |
| MW3D-S12-60 | 57.5-60 | 0.2 | NO | NS | | | | | | | | |
| MW4S-S1 | 2.5-5 | 1.2 | NO | NS | X | X | X | | | | | |
| MW-4S-S2 | 7-8 | 1.3 | NO | NS | X | X | | X | X | X | X | X |
| MW4S-S3 | 11-12 | 0.9 | NO | NS | X | X | X | | | | | |
| MW-4S-S4 | 15-16 | 0.9 | NO | NS | X | X | | X | X | X | X | X |
| MW4D-S1-3 | 2-3 | 0.3 | NO | NS | X | X | | | | X | X | |
| MW4D-S2-10 | 7.5-10 | 0.2 | NO | NS | X | X | | | X | X | | |
| MW4D-S3-15 | 12.5-15 | 0.2 | NO | NS | X | X | | | X | X | | |
| MW4D-S4-20 | 17.5-20 | 0.2 | NO | NS | X | X | | | | | | |
| MW4D-S5-25 | 22.5-25 | 0.4 | NO | NS | | | | | | X | X | |

**TABLE 3**
**SUMMARY OF FIELD SCREENING AND CHEMICAL ANALYSIS SAMPLE SELECTION**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Sample ID | Depth | PID (ppm) | Odor | Sheen | Dx | Gx | BTEX | EPH/VPH | PAHs | VOCs | Total Metals | Cr6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW4D-S6-30 | 27.5-30 | 0.3 | NO | NS | | | | | | | | |
| MW4D-S7-35 | 32.5-35 | 0.2 | NO | NS | | | | | | | | |
| MW4D-S8-40 | 37.5-40 | 0.2 | NO | NS | X | X | | | | X | | |
| MW4D-S9-45 | 42.5-45 | 0.1 | NO | NS | | | | | | | | |
| MW4D-S10-50 | 47.5-50 | 0.1 | NO | NS | | | | | | | | |
| MW4D-S11-55 | 52.5-55 | 0.2 | NO | NS | | | | | | | | |
| TP-16-S1-5 | 5 | 0.0 | NO | NS | X | | | | | | | |
| TP-16-S2-10 | 10 | 0.0 | NO | NS | X | X | | | | | X | |
| TP-17-S1-5 | 5 | 0.0 | NO | NS | X | | | | | | | |
| TP-17-S2-10 | 10 | 0.0 | NO | NS | X | | | | X | | X | |
| TP-17-S3-15 | 15 | 0.0 | NO | NS | X | X | | | | | | |
| TP-18-S1-5 | 5 | 0.0 | NO | NS | X | | | | | | | |
| TP-18-S2-10 | 10 | 0.0 | NO | NS | X | | | | X | | | |
| TP-19-S1-5 | 5 | 0.0 | NO | NS | X | | | | | | | |
| TP-19-S2-10 | 10 | 0.0 | NO | NS | X | | | | X | | X | |
| TP-20-S1-5 | 5 | 0.0 | OO | NS | X | X | | X | | | | |
| TP-20-S2-10 | 10 | 0.0 | OO | NS | X | | | | X | | | |
| **TP-21-S1-5** | 5 | 1.2 | MO | SS | X | X | | X | | | | |
| TP-21-S2-10 | 10 | 18.2 | MO | MS | X | X | | X | X | X | X | |
| TP-21-S200-10 | 10 | 18.2 | MO | MS | X | X | | X | X | X | X | |
| TP-21-S3-15 | 15 | 9.9 | SO | SS | X | X | | X | X | X | | |
| TP-22-S1-5 | 5 | 0.0 | HO | NS | X | X | | X | X | X | X | |
| TP-22-S2-10 | 10 | 0.0 | NO | NS | X | X | | | X | | | |
| TP-22-S3-15 | 15 | 0.0 | NO | NS | | | | | | | | |
| TP-23-S1-5 | 5 | 0.0 | NO | NS | X | | | | | | | |
| TP-23-S2-10 | 10 | 0.0 | NO | NS | X | X | | | X | X | X | |
| **TP-24-S1-2.5** | 2.5 | 10.1 | MO | MS | X | X | | X | X | X | X | |
| **TP-24-S100-2.5** | 2.5 | 10.1 | MO | MS | X | X | | X | X | X | X | |
| TP-24-S2-5 | 5 | 3.0 | SO | SS | X | X | | X | X | X | | |
| TP-24-S3-10 | 10 | 0.0 | NO | NS | X | X | | | X | | | |
| TP-24-S4-15 | 15 | 0.0 | NO | NS | | | | | | | | |
| TP-25-S1-2.5 | 2.5 | 0.0 | SO | NS | X | X | | X | | X | | |
| TP-25-S2-5 | 5 | 0.0 | NO | NS | X | X | | | X | | X | |
| TP-25-S3-10 | 10 | 0.0 | NO | NS | | | | | | | | |
| TP-25-S4-15 | 15 | 0.0 | NO | NS | X | X | | | X | | | |
| TP-26-S1-2.5 | 2.5 | 0.0 | SO | NS | X | X | | X | X | X | | |
| TP-26-S2-5 | 5 | 0.0 | NO | NS | X | X | | | X | | X | |
| TP-26-S3-10 | 10 | 0.0 | NO | NS | | | | | | | | |
| TP-26-S4-15 | 15 | 0.0 | NO | NS | | | | | | | | |
| TP-27-S1-5 | 5 | 0.0 | NO | NS | X | X | | | X | | X | |
| TP-27-S2-10 | 10 | 0.0 | NO | NS | X | | | | | | | |
| TP-28-S1-5 | 5 | 0.0 | NO | NS | X | X | | | X | | X | |
| TP-28-S2-10 | 10 | 0.0 | NO | NS | X | | | | | | | |
| TP-29-S1-5 | 5 | 1.2 | SO | NS | X | X | | X | X | X | X | |
| TP-29-S2-10 | 10 | 0.0 | NO | NS | X | X | | | X | | | |
| TP-30-S1-5 | 5 | 0.0 | NO | NS | X | X | | | X | | X | |
| TP-30-S2-10 | 10 | 0.0 | NO | NS | X | | | | | | | |
| TP-31-S1-2.5 | 2.5 | 0.0 | NO | NS | X | | | | X | | X | |
| TP-31-S2-5 | 5 | 0.0 | NO | NS | X | | | | | | | |
| TP-32-S1-2.5 | 2.5 | 0.0 | NO | NS | X | | | | X | | X | |
| TP-32-S2-5 | 5 | 0.0 | NO | NS | X | | | | | | | |
| TP-33-S1-2.5 | 2.5 | 0.0 | NO | NS | X | X | | | X | | X | |
| TP-33-S2-5 | 5 | 0.0 | NO | NS | X | | | | | | | |
| **TP-34-S1-2.5** | 2.5 | 34.8 | HO | SS | X | X | | X | X | X | X | |
| TP-34-S2-5 | 5 | 0.0 | NO | NS | X | X | | | X | X | | |
| TP-34-S3-10 | 10 | 0.0 | NO | NS | | | | | | | | |
| TP-35-S1-5 | 5 | 0.0 | NO | NS | X | | | | | | | |
| TP-35-S2-10 | 10 | 0.0 | NO | NS | X | | | | | | | |
| **TP-36-S1-3.5** | 3.5 | 24.6 | HO | MS | X | X | | X | X | X | X | |
| TP-36-S2-10.0 | 10 | 0.0 | NO | NS | X | X | | | X | | | |
| TP-36B-S1-5 | 5 | 0.0 | NO | NS | X | X | | | X | X | X | |
| TP-36B-S2-10 | 10 | 0.0 | NO | NS | X | | | | | | | |
| TP-37-S1-2.5 | 2.5 | 0.0 | NO | NS | X | X | | | X | | X | |
| TP-37-S1-5.0 | 5 | 0.0 | NO | NS | X | | | | | | | |

**TABLE 3**
**SUMMARY OF FIELD SCREENING AND CHEMICAL ANALYSIS SAMPLE SELECTION**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Sample ID | Depth | PID (ppm) | Odor | Sheen | Dx | Gx | BTEX | EPH/VPH | PAHs | VOCs | Total Metals | Cr6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-38-S200 | 5 | <0.1 | NO | NS | X | X | | | X | | X | |
| TP-39-S1-2.5 | 2.5 | <0.1 | NO | NS | X | X | | | X | | X | |
| TP-39-S2-5.0 | 5 | <0.1 | NO | NS | X | | | | | | | |
| TP-40-S1-5 | 5 | <0.1 | NO | NS | X | X | | | X | | X | |
| TP-40-S2-10 | 10 | <0.1 | NO | NS | X | | | | | | | |
| TP-41-S1-5 | 5 | <0.1 | NO | NS | X | X | | | X | | X | |
| TP-41-S2-10 | 10 | <0.1 | NO | NS | X | | | | | | | |
| **TP-42-S1-2.5** | 2.5 | 1.9 | HO | NS | X | X | | X | X | X | X | |
| **TP-42-S2-5** | 5 | 1.0 | HO | NS | X | X | | X | | | | |
| TP-42-S3-10 | 10 | <0.1 | NO | NS | X | X | | | X | | | |
| TP-43-S1-5 | 5 | <0.1 | NO | NS | | | | | | | | |
| TP-34-S2-7.5 | 7.5 | <0.1 | SO | NS | X | X | | X | | | | |
| **TP-43-S2-7.5B** | 7.5 | <0.1 | NO | NS | X | X | | | X | | X | |
| TP-43-S3-10 | 10 | <0.1 | NO | NS | X | | | | X | X | X | |
| TP-43-S300 | 10 | <0.1 | NO | NS | X | | | | X | X | X | |
| **TP-43-S4-14** | 14 | 16.0 | MO | MS | X | X | | X | X | X | X | |
| **TP-44-S1-5** | 5 | 45.4 | MO | MS | X | X | | X | | | | |
| **TP-44-S2-10** | 10 | 70.4 | HO | HS | X | X | | X | X | X | X | |
| TP-44-S3-15 | 15 | 1.6 | NO | NS | X | X | | | X | X | | |
| TP-45-S1-5 | 5 | 0.1 | NO | NS | X | X | | | X | | X | |
| TP-45-S2-7.5 | 7.5 | <0.1 | NO | NS | | | | | | | | |
| TP-45-S3-10 | 10 | <0.1 | NO | NS | X | | | | | | | |
| TP-46-S1-5 | 5 | <0.1 | NO | NS | X | X | | | X | | X | |
| TP-46-S2-10 | 10 | <0.1 | NO | NS | X | | | | | | | |
| TP-47-S1-5 | 5 | <0.1 | SO | SS | X | X | | X | X | X | X | |
| TP-47-S2-10 | 10 | <0.1 | NO | NS | X | X | | | X | X | X | |
| TP-47-S3-15 | 15 | <0.1 | NO | NS | | | | | | | | |
| **TP-48-S1-5** | 5 | >100 | MO | SS | X | X | | X | X | X | X | |
| TP-48-S1-5B | 5 | <0.1 | NO | NS | X | X | | | X | X | X | |
| TP-48-S2-10 | 10 | 34.9 | MO | MS | X | | | X | | | | |
| TP-48-S2-10b | 10 | <0.1 | NO | NS | X | X | | | | | | |
| TP-48-S3-15 | 15 | <0.1 | NO | NS | X | X | | | X | X | X | |
| **TP-49-S1-2.5** | 2.5 | 112.6 | HO | NS | X | X | | X | | X | | |
| **TP-49-S2-5** | 5 | 97.3 | SO | SS | X | X | | X | X | X | | |
| **TP-49-S3-7.5** | 7.5 | 844.0 | SO | NS | X | X | | X | | X | | |
| **TP-49-S4-10** | 10 | 1044.0 | SO | NS | X | X | | X | X | X | X | |
| **TP-49-S5-18** | 18 | 69.8 | SO | NS | X | X | | X | X | X | X | |
| TP-50-S1-5 | 5 | <0.1 | NO | NS | X | X | | | X | | | |
| TP-50-S2-10 | 10 | <0.1 | NO | NS | X | | | | | | | |
| **TP-51-S1-5** | 5 | 35.7 | MO | SS | X | X | | X | X | X | X | |
| **TP-51-S100-5** | 5 | 35.7 | MO | SS | X | X | | X | X | X | X | |
| TP-51-S2-10 | 10 | 2.6 | SO | NS | X | X | | X | | X | | |
| TP-51-S3-15 | 15 | <0.1 | NO | NS | X | | | | | | | |
| TP-52-S1-5 | 5 | <0.1 | NO | NS | X | X | | | X | | X | |
| TP-52-S2-10 | 10 | <0.1 | NO | NS | | | | | | | | |
| TP-52-S3-15 | 15 | <0.1 | NO | NS | X | | | | | | | |
| TP-53-S1-5 | 5 | <0.1 | NO | NS | X | X | | | | | | |
| TP-53-S2-10 | 10 | <0.1 | NO | NS | X | | | | | | | |
| TP-54-S1-5 | 5 | <0.1 | NO | NS | X | | | | | | | |
| TP-54-S2-10 | 10 | 0.8 | NO | NS | X | X | | | | X | X | |
| **TP-55-S1-2.5** | 2.5 | 3.7 | MO | NS | X | X | | X | X | X | X | |
| TP-55-S2-5 | 5 | 1.4 | MO | NS | X | X | | X | | | | |
| TP-55-S3-10 | 10 | 0.3 | SO | NS | X | X | | X | | | | |
| **TP-55-S4-15** | 15 | 193.4 | HO | NS | X | X | | X | X | X | X | |
| TP-56-S1-2.5 | 2.5 | <0.1 | NO | NS | X | | | | | | | |
| TP-56-S2-5 | 5 | <0.1 | NO | NS | X | | | | | | | |
| TP-56-S3-10 | 10 | <0.1 | NO | NS | X | | | | | | | |
| TP-56-S4-15 | 15 | <0.1 | NO | NS | X | X | | | X | X | X | |
| TP-57-S1-5 | 5 | <0.1 | NO | NS | X | X | | | X | X | X | |
| TP-57-S2-10 | 10 | <0.1 | NO | NS | X | X | | | | | | |
| TP-58-S1-2.5 | 2.5 | <0.1 | NO | NS | X | X | | | | | | |
| TP-58-S2-5 | 5 | <0.1 | NO | NS | X | X | | | X | X | X | |
| TP-58-S3-10 | 10 | <0.1 | NO | NS | X | X | | | | | | |
| TP-58-S4-15 | 15 | <0.1 | NO | NS | X | X | | | X | X | | |
| **TP-59-S1-5** | 5 | 49.1 | HO | NS | X | X | | X | X | X | X | |

**TABLE 3**
**SUMMARY OF FIELD SCREENING AND CHEMICAL ANALYSIS SAMPLE SELECTION**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Sample ID | Depth | PID (ppm) | Odor | Sheen | Dx | Gx | BTEX | EPH/VPH | PAHs | VOCs | Total Metals | Cr6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TP-59-S2-10** | 10 | 113.8 | HO | SS | X | X | | X | X | X | | |
| **TP-59-S3-15** | 15 | 168.7 | HO | NS | X | X | | X | X | X | X | |
| TP-60-S1-5 | 5 | <0.1 | NO | NS | X | X | | | X | X | X | |
| TP-60-S2-10 | 10 | <0.1 | NO | NS | X | | | | | | | |
| TP-61-S1-5 | 5 | <0.1 | NO | NS | X | X | | | X | X | X | |
| TP-61-S2-10 | 10 | <0.1 | NO | NS | X | | | | | | | |

***Notes:***

***bold*** *entries have analytical results above MTCA Method A Cleanup Levels*

*<: not detected below detector limit*

*BTE: benzene, toluene, ethylbenzene, and xylenes*

*Cr6: hexavalent chromium*

*Dx: NWTPH-Dx (diesel- and oil-range total petroleum hydrocarbons)*

*EPH/VPH: extractable petroleum hydrocarbons/volatile petroleum hydrocarbons*

*Gx: NWTPH-Gx (gasoline-range total petroleum hydrocarbons)*

*HO: heavy odor*

*HS: heavy sheen*

*MO: moderate odor*

*MS: moderate sheen*

*NO: no odor*

*NS: no sheen*

*PAHs: polycyclic aromatic hydrocarbons*

*PID: photoionization detector*

*ppm: parts per million*

*SO: slight odor*

*VOCs: volatile organic compounds*

*X: analyte selected for laboratory analyses*

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | B-11<br>B11-S1-5<br>10/26/2022<br>210409-42<br>4 - 6 (ft)<br>749.7 to 747.7<br>Saturated | B-11<br>B11-S1D<br>10/26/2022<br>210409-44<br>4 - 6 (ft)<br>749.7 to 747.7<br>Saturated | B-11<br>B11-S3-15<br>10/26/2022<br>210409-45<br>12.5 - 15 (ft)<br>741.2 to 738.7<br>Saturated | B-11<br>B11-S7-35<br>10/26/2022<br>210409-49<br>32.5 - 35 (ft)<br>721.2 to 718.7<br>Saturated | B-11<br>B11-S10-50<br>10/26/2022<br>210409-52<br>47.5 - 50 (ft)<br>706.2 to 703.7<br>Saturated | B-12<br>B12-S1-5<br>10/24/2022<br>210370-01<br>2.5 - 5 (ft)<br>751.3 to 748.8<br>Saturated | B-12<br>B12-S2-7<br>10/24/2022<br>210370-02<br>5 - 7.5 (ft)<br>748.8 to 746.3<br>Saturated | B-12<br>B12-S3-15<br>10/24/2022<br>210370-03<br>12.5 - 15 (ft)<br>741.3 to 738.8<br>Saturated | B-12<br>B12-S4-20<br>10/24/2022<br>210370-04<br>17.5 - 20 (ft)<br>736.3 to 733.8<br>Saturated | B-12<br>B12-S10-50<br>10/24/2022<br>210370-10<br>47.5 - 50 (ft)<br>706.3 to 703.8<br>Saturated | B-13<br>B13-S1-5<br>10/25/2022<br>210409-01<br>1 - 3 (ft)<br>757 to 755<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 UJ |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | **0.0014** [A] | 0.001 U | **0.0021 J** |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 UJ |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | **0.5 J** |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | **0.0041 J** |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | **0.25 J** |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.021 J** |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.5 U | 0.5 U | 0.5 U | **1.1 J LC** [A] | **0.66 J LC** [A] | 0.2 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | **0.0047 J** |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | **0.0018** | 0.001 U | **0.0096 J** |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 UJ |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.0257 J** |
| | | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.01 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.01 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.01 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.01 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | 0.002 U | **0.0021** | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.01 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.023** [B] |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.027** [B] |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.0039** [A] | 0.002 U | **0.04 J** [B] |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | B-11<br>B11-S1-5<br>10/26/2022<br>210409-42<br>4 - 6 (ft)<br>749.7 to 747.7<br>Saturated | B-11<br>B11-S1D<br>10/26/2022<br>210409-44<br>4 - 6 (ft)<br>749.7 to 747.7<br>Saturated | B-11<br>B11-S3-15<br>10/26/2022<br>210409-45<br>12.5 - 15 (ft)<br>741.2 to 738.7<br>Saturated | B-11<br>B11-S7-35<br>10/26/2022<br>210409-49<br>32.5 - 35 (ft)<br>721.2 to 718.7<br>Saturated | B-11<br>B11-S10-50<br>10/26/2022<br>210409-52<br>47.5 - 50 (ft)<br>706.2 to 703.7<br>Saturated | B-12<br>B12-S1-5<br>10/24/2022<br>210370-01<br>2.5 - 5 (ft)<br>751.3 to 748.8<br>Saturated | B-12<br>B12-S2-7<br>10/24/2022<br>210370-02<br>5 - 7.5 (ft)<br>748.8 to 746.3<br>Saturated | B-12<br>B12-S3-15<br>10/24/2022<br>210370-03<br>12.5 - 15 (ft)<br>741.3 to 738.8<br>Saturated | B-12<br>B12-S4-20<br>10/24/2022<br>210370-04<br>17.5 - 20 (ft)<br>736.3 to 733.8<br>Saturated | B-12<br>B12-S10-50<br>10/24/2022<br>210370-10<br>47.5 - 50 (ft)<br>706.3 to 703.8<br>Saturated | B-13<br>B13-S1-5<br>10/25/2022<br>210409-01<br>1 - 3 (ft)<br>757 to 755<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.024** |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.011** |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.0022** | 0.002 U | 0.002 U | **0.009** [A] | 0.002 U | **0.031** |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.01 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.042** [B] |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.01 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.017** [B] |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.0035** | 0.002 U | 0.01 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.0035** | 0.002 U | 0.01 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.0067** | 0.002 U | **0.023** |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.0029** | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.049** [B] |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.001522** | 0.002 U | 0.002 U | **0.00188** | 0.002 U | **0.03691** |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | 5 U | **11** | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | **81** | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | **100** |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | **700** |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | **81** | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | **800** |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | **92** | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | **800** |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | 23 U | - | - | - | - | - | - | - | - | 22.7 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | 11.5 U | - | - | - | - | - | - | - | - | 11.4 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | 11.5 U | - | - | - | - | - | - | - | - | 11.4 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | 11.5 U | - | - | - | - | - | - | - | - | 11.4 U |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | 11.5 U | - | - | - | - | - | - | - | - | **103** |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | 23 U | - | - | - | - | - | - | - | - | 22.7 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | 11.5 U | - | - | - | - | - | - | - | - | 11.4 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | 11.5 U | - | - | - | - | - | - | - | - | 11.4 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | **19.3** | - | - | - | - | - | - | - | - | **17.2** |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | 11.5 U | - | - | - | - | - | - | - | - | **26.6** |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 5 U | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 5 U | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 5 U | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 5 U | - | - | - | - | - | - | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 0 U | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | 5 U | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **9.6** | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **120** | - | - | - | - | - | - | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | **130** | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | 0.02 U | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | 0.05 U | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | 0.05 U | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | 0.05 U | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | 0.05 U | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | 0.05 U | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | 0.05 U | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | **1.89 J-** | **1.16 J-** | **2.59 J-** | **5.01 J-** | **4.07 J-** | **2.38** | **2.37** | **1.82** | **1.95** | **4.62** | **2.68 J-** |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | **94.5 J+** | **68.5 J+** | **52 J+** | **50.7 J+** | **45.8 J+** | **126** | **49.4** | **39.3** | **191** | **41** | **125 J+** |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | **23.3 J-** | **19.5 J-** | **14.1 J-** | **8.42 J-** | **7.23 J-** | **20.1** | **14.6** | **10.4** | **5.83** | **8.27** | **17.2 J-** |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | **61.6 J-** [A] | **48.8 J-** | **44.3 J-** | **32.5 J-** | **30.1 J-** | **88.5** [A] | **40.9** | **41.3** | **27.2** | **41.4** | **64 J-** [B] |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | **3.14** | **2.73** | **2.54** | **2.3** | **2.21** | **5.79** | **2.24** | **2.52** | **1.9** | **2.94** | **24.5** |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | **18.6 J-** | **15.5 J-** | **17.8 J-** | **7.46 J-** | **6.75 J-** | **18.4** | **13.9** | **9.69** | **7.23** | **7.83** | **20 J-** |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 1 U | 1 U | 1 U | 1 U | 1 U | 5 UJ |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | 1 U | 1 U | 1 U | - | - | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | **50.5 J-** | **45.9 J-** | **42.7 J-** | **35.3 J-** | **33.6 J-** | **55.7** | **47** | **48.5** | **52.3** | **36.2** | **65.9 J-** |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | 0.1 U | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | B-13<br>B13-S2-10<br>10/25/2022<br>210409-02<br>10 - 11 (ft)<br>748 to 747<br>Saturated | B-13<br>B13-S4-20<br>10/25/2022<br>210409-04<br>17.5 - 20 (ft)<br>740.5 to 738<br>Saturated | B-13<br>B13-S10-50<br>10/25/2022<br>210409-10<br>47.5 - 50 (ft)<br>710.5 to 708<br>Saturated | B-14<br>B14-S1-5<br>10/26/2022<br>210409-22<br>2 - 4 (ft)<br>755.2 to 753.2<br>Vadose | B-14<br>B14-S2-10<br>10/26/2022<br>210409-23<br>10 - 11 (ft)<br>747.2 to 746.2<br>Saturated | B-14<br>B14-S4-19<br>10/26/2022<br>210409-25<br>18 - 19 (ft)<br>739.2 to 738.2<br>Saturated | B-14<br>B14-S8-40<br>10/26/2022<br>210409-29<br>37.5 - 40 (ft)<br>719.7 to 717.2<br>Saturated | B-15<br>B15-S1-5<br>10/24/2022<br>210370-11<br>2.5 - 5 (ft)<br>755.2 to 752.7<br>Saturated | B-15<br>B15-S2-15<br>10/24/2022<br>210370-12<br>12.5 - 15 (ft)<br>745.2 to 742.7<br>Saturated | B-15<br>B15-S3-20<br>10/24/2022<br>210370-13<br>17.5 - 20 (ft)<br>740.2 to 737.7<br>Saturated | B-15<br>B15-S4-25<br>10/24/2022<br>210370-14<br>22.5 - 25 (ft)<br>735.2 to 732.7<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.05 UJ | 0.05 UJ | 0.05 UJ | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | **0.0013** [A] |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.05 UJ | 0.05 UJ | 0.05 UJ | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | **0.5 J** | **0.5 J** | **0.5 J** | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | **0.25 J** | **0.25 J** | **0.25 J** | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | **0.0028** | 0.001 U | 0.001 U | 0.001 U |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.001 UJ | 0.001 UJ | 0.001 UJ | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| | | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | B-13<br>B13-S2-10<br>10/25/2022<br>210409-02<br>10 - 11 (ft)<br>748 to 747<br>Saturated | B-13<br>B13-S4-20<br>10/25/2022<br>210409-04<br>17.5 - 20 (ft)<br>740.5 to 738<br>Saturated | B-13<br>B13-S10-50<br>10/25/2022<br>210409-10<br>47.5 - 50 (ft)<br>710.5 to 708<br>Saturated | B-14<br>B14-S1-5<br>10/26/2022<br>210409-22<br>2 - 4 (ft)<br>755.2 to 753.2<br>Vadose | B-14<br>B14-S2-10<br>10/26/2022<br>210409-23<br>10 - 11 (ft)<br>747.2 to 746.2<br>Saturated | B-14<br>B14-S4-19<br>10/26/2022<br>210409-25<br>18 - 19 (ft)<br>739.2 to 738.2<br>Saturated | B-14<br>B14-S8-40<br>10/26/2022<br>210409-29<br>37.5 - 40 (ft)<br>719.7 to 717.2<br>Saturated | B-15<br>B15-S1-5<br>10/24/2022<br>210370-11<br>2.5 - 5 (ft)<br>755.2 to 752.7<br>Saturated | B-15<br>B15-S2-15<br>10/24/2022<br>210370-12<br>12.5 - 15 (ft)<br>745.2 to 742.7<br>Saturated | B-15<br>B15-S3-20<br>10/24/2022<br>210370-13<br>17.5 - 20 (ft)<br>740.2 to 737.7<br>Saturated | B-15<br>B15-S4-25<br>10/24/2022<br>210370-14<br>22.5 - 25 (ft)<br>735.2 to 732.7<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | **1.8 J-** | **3 J-** | **4.57 J-** | **2.5 J-** | **1.52 J-** | **1.76 J-** | **6.23 J-** | **2.22** | **2.49** | **2.62** | **2.9** |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | **67.1 J+** | **30.7 J+** | **34.1 J+** | **116 J+** | **37.6 J+** | **33.9 J+** | **51.2 J+** | **32.6** | **50.9** | **28.3** | **44.1** |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | **15 J-** | **8.1 J-** | **11.8 J-** | **17.5 J-** | **10.1 J-** | **12 J-** | **11.9 J-** | **11.5** | **8.6** | **9.24** | **10.2** |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | **37.9 J-** | **55.6 J- [A]** | **30.2 J-** | **71.2 J- [B]** | **53.6 J- [A]** | **48.6 J-** | **41.9 J-** | **37.1** | **58.8 [A]** | **55.9 [A]** | **58.8 [A]** |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | **2.36** | **3.12** | **2.51** | **5.67** | **2.7** | **2.28** | **3.45** | **4.58** | **2.69** | **2.44** | **2.63** |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | **11.5 J-** | **5.6 J-** | **8.88 J-** | **15.2 J-** | **12 J-** | **11.2 J-** | **9.65 J-** | **9.83** | **8.34** | **9.03** | **15.4** |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 1 U | 1 U | 1 U | 1 U |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | **49.9 J-** | **37.4 J-** | **33 J-** | **50.2 J-** | **49.6 J-** | **52.3 J-** | **44.5 J-** | **37.7** | **51.7** | **41.6** | **49.3** |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | B-15<br>B15-S7-40<br>10/24/2022<br>210370-17<br>37.5 - 40 (ft)<br>720.2 to 717.7<br>Saturated | B-16<br>B16-S1-5<br>10/26/2022<br>210409-32<br>2 - 4 (ft)<br>754.7 to 752.7<br>Vadose | B-16<br>B16-S2-7<br>10/26/2022<br>210409-33<br>6 - 7 (ft)<br>750.7 to 749.7<br>Saturated | B-16<br>B16-S3-15<br>10/26/2022<br>210409-34<br>12.5 - 15 (ft)<br>744.2 to 741.7<br>Saturated | B-16<br>B16-S5-25<br>10/26/2022<br>210409-36<br>22.5 - 25 (ft)<br>734.2 to 731.7<br>Saturated | B-16<br>B16-S10-50<br>10/26/2022<br>210409-41<br>47.5 - 50 (ft)<br>709.2 to 706.7<br>Saturated | B-17<br>B17-S1-5<br>10/25/2022<br>210409-11<br>2 - 4 (ft)<br>755.9 to 753.9<br>Vadose | B-17<br>B17-S1D<br>10/25/2022<br>210409-21<br>2 - 4 (ft)<br>755.9 to 753.9<br>Vadose | B-17<br>B17-S3-15<br>10/25/2022<br>210409-13<br>12.5 - 15 (ft)<br>745.4 to 742.9<br>Saturated | B-17<br>B17-S5-25<br>10/25/2022<br>210409-15<br>22.5 - 25 (ft)<br>735.4 to 732.9<br>Saturated | B-17<br>B17-S8-40<br>10/25/2022<br>210409-18<br>37.5 - 40 (ft)<br>720.4 to 717.9<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.001 U | **0.0012 J** | 0.001 U | **0.001 J [A]** | 0.001 U | 0.001 U | **0.0012 J** | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 UJ | 0.05 UJ | 0.05 UJ | 0.05 UJ | 0.05 UJ |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | 0.001 U | **0.0012 J** | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | **0.25 J** | **0.25 J** | **0.25 J** | **0.25 J** | **0.25 J** |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | 0.002 U | **0.0034 J** | 0.002 U | **0.0044 J** | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | 0.5 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | **0.3 J LC [A]** | 0.2 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.001 U | **0.0016 J** | 0.001 U | **0.0011 J** | 0.001 U | 0.001 U | **0.0021 J** | 0.001 UJ | 0.001 U | 0.001 U | 0.001 U |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.001 U | **0.0072 J** | 0.001 U | **0.0029 J** | 0.001 U | 0.001 U | **0.0036 J** | 0.001 UJ | 0.001 U | **0.002 J** | 0.001 U |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 UJ | 0.001 UJ | 0.001 UJ | 0.001 UJ | 0.001 UJ |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | 0.002 U | **0.005 J** | 0.002 U | **0.0055 J** | 0.002 U | 0.002 U | **0.0021 J** | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | B-15<br>B15-S7-40<br>10/24/2022<br>210370-17<br>37.5 - 40 (ft)<br>720.2 to 717.7<br>Saturated | B-16<br>B16-S1-5<br>10/26/2022<br>210409-32<br>2 - 4 (ft)<br>754.7 to 752.7<br>Vadose | B-16<br>B16-S2-7<br>10/26/2022<br>210409-33<br>6 - 7 (ft)<br>750.7 to 749.7<br>Saturated | B-16<br>B16-S3-15<br>10/26/2022<br>210409-34<br>12.5 - 15 (ft)<br>744.2 to 741.7<br>Saturated | B-16<br>B16-S5-25<br>10/26/2022<br>210409-36<br>22.5 - 25 (ft)<br>734.2 to 731.7<br>Saturated | B-16<br>B16-S10-50<br>10/26/2022<br>210409-41<br>47.5 - 50 (ft)<br>709.2 to 706.7<br>Saturated | B-17<br>B17-S1-5<br>10/25/2022<br>210409-11<br>2 - 4 (ft)<br>755.9 to 753.9<br>Vadose | B-17<br>B17-S1D<br>10/25/2022<br>210409-21<br>2 - 4 (ft)<br>755.9 to 753.9<br>Vadose | B-17<br>B17-S3-15<br>10/25/2022<br>210409-13<br>12.5 - 15 (ft)<br>745.4 to 742.9<br>Saturated | B-17<br>B17-S5-25<br>10/25/2022<br>210409-15<br>22.5 - 25 (ft)<br>735.4 to 732.9<br>Saturated | B-17<br>B17-S8-40<br>10/25/2022<br>210409-18<br>37.5 - 40 (ft)<br>720.4 to 717.9<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | **5.04** | **1.55 J-** | **1.22 J-** | **2.44 J-** | **2.16 J-** | **3.73 J-** | **2.56 J-** | **2.73 J-** | **1.3 J-** | **1.39 J-** | **5.29 J-** |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | **44** | **177 J+** | **68.6 J+** | **40.4 J+** | **61 J+** | **30.4 J+** | **123 J+** | **138 J+** | **47.4 J+** | **23 J+** | **50.7 J+** |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | **12.5** | **29.9 J-** | **25.4 J-** | **12.7 J-** | **10.7 J-** | **8.05 J-** | **15.4 J-** | **17.1 J-** | **12.1 J-** | **14.8 J-** | **10.6 J-** |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | **53.3** [A] | **64.1 J-** [B] | **56.1 J-** [A] | **45.4 J-** | **41.2 J-** | **34.5 J-** | **56.8 J-** [B] | **48.3 J-** | **51.9 J-** | **48.6 J-** | **48.4 J-** |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | **2.67** | **4.07** | **3** | **2.69** | **2.59** | **2.43** | **4.86** | **4.99** | **2.77** | **2.16** | **2.93** |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | **11.5** | **21.6 J-** | **17.5 J-** | **10.3 J-** | **9.21 J-** | **8.03 J-** | **14.8 J-** | **17.5 J-** | **9.4 J-** | **13.1 J-** | **10 J-** |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | 1 U | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ | 5 UJ |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | **48.8** | **47.8 J-** | **53 J-** | **52.4 J-** | **50.8 J-** | **38.2 J-** | **55.9 J-** | **63.1 J-** | **51.2 J-** | **46 J-** | **51.9 J-** |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | MW-1D<br>MW1D-S1-5<br>10/31/2022<br>211025-01<br>2.5 - 5 (ft)<br>755.5 to 753<br>Vadose | MW-1D<br>MW1D-S2-10<br>10/31/2022<br>211025-02<br>7.5 - 10 (ft)<br>750.5 to 748<br>Saturated | MW-1D<br>MW1D-S3-15<br>10/31/2022<br>211025-03<br>12.5 - 15 (ft)<br>745.5 to 743<br>Saturated | MW-1D<br>MW1D-S4-20<br>10/31/2022<br>211025-04<br>17.5 - 20 (ft)<br>740.5 to 738<br>Saturated | MW-1D<br>MW1D-S9-45<br>10/31/2022<br>211025-09<br>42.5 - 45 (ft)<br>715.5 to 713<br>Saturated | MW-1S<br>MW-1S-S1<br>06/27/2022<br>206500-14<br>2 - 2.8 (ft)<br>755.9 to 755.1<br>Vadose | MW-1S<br>MW-1S-S2<br>06/27/2022<br>07-016-09<br>7 - 7.8 (ft)<br>750.9 to 750.1<br>Saturated | MW-1S<br>MW-1S-S3<br>06/27/2022<br>07-016-10<br>12 - 12.8 (ft)<br>745.9 to 745.1<br>Saturated | MW-1S<br>MW-1S-S4<br>06/27/2022<br>206500-17<br>18 - 18.8 (ft)<br>739.9 to 739.1<br>Saturated | MW-2D<br>MW2D-S8-40<br>10/24/2022<br>210464-32<br>37.5 - 40 (ft)<br>720.5 to 718<br>Saturated | MW-2D<br>MW2D-S1-5<br>10/28/2022<br>210464-24<br>2.5 - 5 (ft)<br>755.5 to 753<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | - | 0.005 U | 0.005 U | - | 0.005 U | 0.005 U |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | - | 1 U | 1 U | - | 1 U | 1 U |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | - | 1 U | 1 U | - | 1 U | 1 U |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 5 U | 5 U | 5 U | 5 U | 5 U | - | 5 U | 5 U | - | 5 U | 5 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.001 U | 0.001 U | 0.001 U | **0.0012** [A] | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | **0.0022** | 0.002 U | - | 0.002 U | **0.0025** | - | 0.002 U | 0.002 U |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | - | **0.37 LC** [A] | **0.21 LC** [A] | - | 0.2 U | 0.2 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | - | 0.005 U | 0.005 U | - | 0.01 U | 0.01 U |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | **0.0029** | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 UJ | 0.001 UJ |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | **0.0022** | 0.002 U | - | 0.002 U | **0.0025** | - | 0.002 U | 0.002 U |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | MW-1D<br>MW1D-S1-5<br>10/31/2022<br>211025-01<br>2.5 - 5 (ft)<br>755.5 to 753<br>Vadose | MW-1D<br>MW1D-S2-10<br>10/31/2022<br>211025-02<br>7.5 - 10 (ft)<br>750.5 to 748<br>Saturated | MW-1D<br>MW1D-S3-15<br>10/31/2022<br>211025-03<br>12.5 - 15 (ft)<br>745.5 to 743<br>Saturated | MW-1D<br>MW1D-S4-20<br>10/31/2022<br>211025-04<br>17.5 - 20 (ft)<br>740.5 to 738<br>Saturated | MW-1D<br>MW1D-S9-45<br>10/31/2022<br>211025-09<br>42.5 - 45 (ft)<br>715.5 to 713<br>Saturated | MW-1S<br>MW-1S-S1<br>06/27/2022<br>206500-14<br>2 - 2.8 (ft)<br>755.9 to 755.1<br>Vadose | MW-1S<br>MW-1S-S2<br>06/27/2022<br>07-016-09<br>7 - 7.8 (ft)<br>750.9 to 750.1<br>Saturated | MW-1S<br>MW-1S-S3<br>06/27/2022<br>07-016-10<br>12 - 12.8 (ft)<br>745.9 to 745.1<br>Saturated | MW-1S<br>MW-1S-S4<br>06/27/2022<br>206500-17<br>18 - 18.8 (ft)<br>739.9 to 739.1<br>Saturated | MW-2D<br>MW2D-S8-40<br>10/24/2022<br>210464-32<br>37.5 - 40 (ft)<br>720.5 to 718<br>Saturated | MW-2D<br>MW2D-S1-5<br>10/28/2022<br>210464-24<br>2.5 - 5 (ft)<br>755.5 to 753<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | - | 0.00151 U | 0.00151 U | - | 0.002 U | 0.002 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | **9.1** | 5 U | 5 U | 5 U | 5 U | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | **9.1** | 250 U | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | 0.02 U | - | - | 0.02 U | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | **0.032** | - | - | 0.02 U | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | 0.02 U | - | - | 0.02 U | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | 0.06 U | - | - | 0.06 U | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 23.1 U | 20.1 U | - | - | 30.9 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 11.5 U | 10 U | - | - | 15.5 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 11.5 U | 10 U | - | - | 15.5 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 11.5 U | 10 U | - | - | 15.5 U |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 11.5 U | 10 U | - | - | 15.5 U |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 23.1 U | 20.1 U | - | - | 30.9 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 11.5 U | 10 U | - | - | 15.5 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 11.5 U | 10 U | - | - | 15.5 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | **15.3** | 10 U | - | - | 15.5 U |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 11.5 U | 10 U | - | - | 15.5 U |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 5 U | 5 U | - | - | 5 U |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 5 U | 5 U | - | - | 5 U |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 5 U | 5 U | - | - | 5 U |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 5 U | 5 U | - | - | 5 U |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0 U |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 5 U | 5 U | - | - | 5 U |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 5 U | 5 U | - | - | 5 U |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 5 U | 5 U | - | - | 5 U |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | 0.02 U | 0.02 U | - | - | 0.02 U |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | 0.05 U | 0.05 U | - | - | 0.063 U |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | 0.05 U | 0.05 U | - | - | 0.063 U |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 0.05 U | 0.05 U | - | - | 0.063 U |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | 0.05 U | 0.05 U | - | - | 0.063 U |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | 0.05 U | 0.05 U | - | - | 0.063 U |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.063 U |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | - | **6.65** | - | **2.07** | - | - | **1.52 J-** | **2.5 J-** | - | - | **2.59** |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | - | **72** | - | **28.3** | - | - | **33.1** | **25.1** | - | - | **162 J+** |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | - | 1 U | - | 1 U | - | - | 1 U | 1 U | - | - | 1 U |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | - | **17.5** | - | **8.23** | - | - | **13.8** | **7.44** | - | - | **32.6** |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | 0.595 U | **1** [A] | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | - | **58.5** [A] | - | **49.1** | - | - | **35.6** | **41.2** | - | - | **89.5** [B] |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | - | **2.49** | - | **1.73** | - | - | **2.01** | **2.57** | - | - | **3.49** |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | **0.044** | - | **0.026** | - | - | 0.1 U | 0.1 U | - | - | **0.17** [B] |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | - | **19** | - | **6.8** | - | - | **12.5** | **8.11** | - | - | **24** |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | - | 5 U | - | 5 U | - | - | 1 U | 1 U | - | - | 5 UJ |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | - | 1 U | - | 1 U | - | - | 1 UJ | 1 UJ | - | - | 1 U |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | - | **59.9** | - | **38.6** | - | - | **47.4 J-** | **43.2 J-** | - | - | **58.9** |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | MW-2D<br>MW2D-S1-5-DUP<br>10/28/2022<br>210464-25<br>2.5 - 5 (ft)<br>755.5 to 753<br>Vadose | MW-2D<br>MW2D-S2-10<br>10/28/2022<br>210464-26<br>7.5 - 10 (ft)<br>750.5 to 748<br>Saturated | MW-2D<br>MW2D-S3-15<br>10/28/2022<br>210464-27<br>12.5 - 15 (ft)<br>745.5 to 743<br>Saturated | MW-2D<br>MW2D-S4-20<br>10/28/2022<br>210464-28<br>17.5 - 20 (ft)<br>740.5 to 738<br>Saturated | MW-2S<br>MW-2S-S1<br>06/27/2022<br>206500-10<br>2 - 2.8 (ft)<br>756 to 755.2<br>Vadose | MW-2S<br>MW-2S-S2<br>06/27/2022<br>07-016-07<br>7 - 7.8 (ft)<br>751 to 750.2<br>Saturated | MW-2S<br>MW-2S-S3<br>06/27/2022<br>07-016-08<br>11 - 11.8 (ft)<br>747 to 746.2<br>Saturated | MW-2S<br>MW-2S-S4<br>06/27/2022<br>206500-13<br>18 - 18.8 (ft)<br>740 to 739.2<br>Saturated | MW-3D<br>MW3D-S1-5<br>10/27/2022<br>210464-01<br>2.5 - 5 (ft)<br>753.7 to 751.2<br>Vadose | MW-3D<br>MW3D-S2-10<br>10/27/2022<br>210464-02<br>7.5 - 10 (ft)<br>748.7 to 746.2<br>Saturated | MW-3D<br>MW3D-S3-15<br>10/27/2022<br>210464-03<br>12.5 - 15 (ft)<br>743.7 to 741.2<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.005 U | 0.005 U | 0.005 U | 0.005 U | - | 0.005 U | 0.005 U | - | 0.005 U | 0.005 U | 0.005 U |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | - | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | **0.096** | 0.05 U | 0.05 U |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | **0.24** | **0.14** | 0.05 U |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | - | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 5 U | 5 U | 5 U | 5 U | - | 5 U | 5 U | - | 5 U | 5 U | 5 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | **0.0032** | **0.0027** | 0.001 U |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | **0.091** | **0.1** | 0.05 U |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | **0.0037** | 0.002 U | 0.002 U |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | - | 0.2 U | 0.2 U | - | 0.2 U | 0.2 U | 0.2 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | - | 0.005 U | 0.005 U | - | 0.01 U | 0.01 U | 0.01 U |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | **0.2** | **0.17** | 0.05 U |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | **0.0088** | **0.0074** | 0.001 U |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | **0.0026** | 0.001 U | 0.001 U |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.001 UJ | 0.001 UJ | 0.001 UJ | 0.001 UJ | - | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | **0.0125** | **0.0074** | 0.002 U |
| | | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | **0.0076** [A] | 0.002 U | - | **0.076** [B] | **0.12** [A] | 0.002 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | **0.0038** | 0.002 U | - | **0.0074** | **0.076** | 0.002 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | **0.028** | **0.015 J** | 0.002 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | MW-2D<br>MW2D-S1-5-DUP<br>10/28/2022<br>210464-25<br>2.5 - 5 (ft)<br>755.5 to 753<br>Vadose | MW-2D<br>MW2D-S2-10<br>10/28/2022<br>210464-26<br>7.5 - 10 (ft)<br>750.5 to 748<br>Saturated | MW-2D<br>MW2D-S3-15<br>10/28/2022<br>210464-27<br>12.5 - 15 (ft)<br>745.5 to 743<br>Saturated | MW-2D<br>MW2D-S4-20<br>10/28/2022<br>210464-28<br>17.5 - 20 (ft)<br>740.5 to 738<br>Saturated | MW-2S<br>MW-2S-S1<br>06/27/2022<br>206500-10<br>2 - 2.8 (ft)<br>756 to 755.2<br>Vadose | MW-2S<br>MW-2S-S2<br>06/27/2022<br>07-016-07<br>7 - 7.8 (ft)<br>751 to 750.2<br>Saturated | MW-2S<br>MW-2S-S3<br>06/27/2022<br>07-016-08<br>11 - 11.8 (ft)<br>747 to 746.2<br>Saturated | MW-2S<br>MW-2S-S4<br>06/27/2022<br>206500-13<br>18 - 18.8 (ft)<br>740 to 739.2<br>Saturated | MW-3D<br>MW3D-S1-5<br>10/27/2022<br>210464-01<br>2.5 - 5 (ft)<br>753.7 to 751.2<br>Vadose | MW-3D<br>MW3D-S2-10<br>10/27/2022<br>210464-02<br>7.5 - 10 (ft)<br>748.7 to 746.2<br>Saturated | MW-3D<br>MW3D-S3-15<br>10/27/2022<br>210464-03<br>12.5 - 15 (ft)<br>743.7 to 741.2<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | **0.0086** | **0.0079** [A] | 0.002 U |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | **0.008** | **0.0095 J** [A] | 0.002 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | **0.0048** | 0.002 U | - | **0.11** | **0.17 J** [A] | 0.002 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | **0.0114** | 0.002 U | - | **0.0834** | **0.196** | 0.002 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | **0.0088** | 0.002 U | - | **0.14** | **0.32 J** | 0.002 U |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | **0.0028** [A] | 0.002 U | - | **0.018** | **0.033** [A] | 0.002 U |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.00151 U | 0.00151 U | - | **0.001586** | **0.001579** | 0.002 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | **240** | **290** | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | **450** | **520** | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | **450** | **520** | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | **690** | **810** [A] | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | 0.02 U | - | 0.02 U | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | 0.02 U | - | 0.02 U | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | 0.02 U | - | 0.02 U | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | 0.06 U | - | 0.06 U | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | 31 U | 27.7 U | - | - | - | 25.8 U | 21.9 U | - | 30 U | 25.6 U | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | 15.5 U | 13.8 U | - | - | - | 12.9 U | 11 U | - | **37.4** | **43.6** | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | 15.5 U | 13.8 U | - | - | - | 12.9 U | 11 U | - | **157** | **149** | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | 15.5 U | 13.8 U | - | - | - | 12.9 U | 11 U | - | **106** | **166** | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | 15.5 U | 13.8 U | - | - | - | 12.9 U | 11 U | - | **48.1** | **25.9** | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | 31 U | 27.7 U | - | - | - | 25.8 U | 21.9 U | - | 30 U | 25.6 U | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | 15.5 U | 13.8 U | - | - | - | 12.9 U | 11 U | - | 15 U | 12.8 U | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | 15.5 U | 13.8 U | - | - | - | 12.9 U | 11 U | - | **55.3** | **56.7** | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | 15.5 U | **23.1** | - | - | - | **21** | **13.9** | - | **136** | **126** | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | 15.5 U | 13.8 U | - | - | - | 12.9 U | 11 U | - | **104** | **71.9** | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | 5 U | 5 U | - | - | - | 5 U | 5 U | - | 5 U | 5 U | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | 5 U | 5 U | - | - | - | 5 U | 5 U | - | **9.2** | **11** | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | 5 U | 5 U | - | - | - | 5 U | 5 U | - | **15** | **19** | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | 5 U | 5 U | - | - | - | 5 U | 5 U | - | 5 U | 5 U | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | 0 U | 0 U | - | - | - | - | - | - | **24** | **30** | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | 5 U | 5 U | - | - | - | 5 U | 5 U | - | **16** | **26** | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | 5 U | 5 U | - | - | - | 5 U | 5 U | - | **26** | **74** | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | 5 U | 5 U | - | - | - | 5 U | 5 U | - | **140** | **490** | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | 0 U | 0 U | - | - | - | - | - | - | **180** | **590** | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.02 U | 0.02 U | - | - | - | 0.02 U | 0.02 U | - | **0.067** [B] | 0.02 U | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | 0.06 U | 0.053 U | - | - | - | 0.05 U | 0.05 U | - | 0.25 U | **0.11** [A] | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.06 U | 0.053 U | - | - | - | 0.05 U | 0.05 U | - | 0.25 U | **0.28** [A] | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | 0.06 U | 0.053 U | - | - | - | 0.05 U | 0.05 U | - | 0.25 U | **0.18** | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.06 U | 0.053 U | - | - | - | 0.05 U | 0.05 U | - | 0.25 U | 0.05 U | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.06 U | 0.053 U | - | - | - | 0.05 U | 0.05 U | - | 0.25 U | **0.51** | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | 0.06 U | 0.053 U | - | - | - | - | - | - | 0.25 U | **0.69** [A] | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | **2.29** | **1.56** | - | **2.76** | - | **1.25 J-** | **2.53 J-** | - | **1.92** | **1.43** | - |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | **161 J+** | **88.6 J+** | - | **35 J+** | - | **49.5** | **34.3** | - | **125 J+** | **50.7 J+** | - |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | 1 U | 1 U | - | 1 U | - | 1 U | 1 U | - | 1 U | 1 U | - |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | **27.6** | **43.6** | - | **12.7** | - | **17.3** | **10.6** | - | **25.3** | **13.6** | - |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | **1.12** [A] | **2.15 J** [AF] | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | **83.4** [B] | **109** [A] | - | **61.8** [A] | - | **48.7** | **47** | - | **69.7** [B] | **52.5** | - |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | **3.73** | **2.53** | - | **2** | - | **2.55** | **2.55** | - | **3** | **2.24** | - |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | **0.17** [B] | 0.1 U | - | 0.1 U | - | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | **21.9** | **31.4** | - | **14.8** | - | **15.9** | **9.56** | - | **21** | **13.3** | - |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | 5 UJ | 5 UJ | - | 5 UJ | - | 1 U | 1 U | - | 1 UJ | 5 UJ | - |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | 1 U | 1 U | - | 1 U | - | 1 UJ | 1 UJ | - | 1 U | 1 U | - |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | **54.1** | **96.5** [A] | - | **46.4** | - | **53.7 J-** | **45.4 J-** | - | **52.5** | **48.8** | - |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | MW-3D<br>MW3D-S4-20<br>10/27/2022<br>210464-04<br>17.5 - 20 (ft)<br>738.7 to 736.2<br>Saturated | MW-3D<br>MW3D-S5-25<br>10/27/2022<br>210464-05<br>22.5 - 25 (ft)<br>733.7 to 731.2<br>Saturated | MW-3D<br>MW3D-S11-55<br>10/27/2022<br>210464-11<br>52.5 - 55 (ft)<br>703.7 to 701.2<br>Saturated | MW-3S<br>MW-3S-S1<br>06/27/2022<br>07-016-03<br>3 - 3.8 (ft)<br>753.5 to 752.7<br>Vadose | MW-3S<br>MW-3S-S2<br>06/27/2022<br>07-016-04<br>7 - 7.8 (ft)<br>749.5 to 748.7<br>Saturated | MW-3S<br>MW-3S-S200<br>06/27/2022<br>07-016-06<br>7 - 7.8 (ft)<br>749.5 to 748.7<br>Saturated | MW-3S<br>MW-3S-S3<br>06/27/2022<br>07-016-05<br>12 - 12.8 (ft)<br>744.5 to 743.7<br>Saturated | MW-3S<br>MW-3S-S4<br>06/27/2022<br>206500-09<br>18 - 18.8 (ft)<br>738.5 to 737.7<br>Saturated | MW-4D<br>MW4D-S1-3<br>10/27/2022<br>210464-13<br>2 - 3 (ft)<br>754.3 to 753.3<br>Vadose | MW-4D<br>MW4D-S2-10<br>10/27/2022<br>210464-14<br>10 - 11 (ft)<br>746.3 to 745.3<br>Saturated | MW-4D<br>MW4D-S3-15<br>10/27/2022<br>210464-15<br>12.5 - 15 (ft)<br>743.8 to 741.3<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | - | 0.005 U | 0.005 U | 0.005 U |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | **0.12** | **0.28** [A] | **0.18** [A] | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | **0.094** | **0.2** | **0.15** | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | **0.058** | **0.14** [A] | **0.086** | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | - | 5 U | 5 U | 5 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | **0.0012** | **0.0041 J** | **0.0024 J** | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | **0.17** | **0.11** | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | **0.0044** | **0.015 J** | **0.0096 J** | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U | **0.34 LC** [B] | **0.36 LC** [A] | 0.2 U | **0.3 LC** [A] | - | 0.2 U | 0.2 U | 0.2 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.01 U | 0.01 U | 0.01 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | - | 0.01 U | 0.01 U | 0.01 U |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | **0.29** | **0.2** | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | **0.0039** | **0.027 J** | **0.016 J** | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | **0.0037 J** | **0.0022 J** | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | - | 0.05 U | 0.05 U | 0.05 U |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | **0.004** [A] | - | 0.001 U | 0.001 U | 0.001 U |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | - | 0.001 U | 0.001 U | 0.001 U |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | **0.0083** | **0.042 J** [A] | **0.0256 J** | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U |
| | | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | 0.002 U | 0.002 U | - | **0.045** | **0.36 J** [A] | **1.8 J** [A] | 0.002 U | - | - | 0.002 U | 0.002 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | 0.002 U | 0.002 U | - | **0.02** | **0.13 J** [A] | **0.89 J** [A] | 0.002 U | - | - | 0.002 U | 0.002 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | 0.002 U | 0.002 U | - | 0.002 U | **0.047 J** | 0.002 UJ | 0.002 U | - | - | 0.002 U | 0.002 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | - | **0.0074** [B] | **0.0035 J** [A] | **0.012 J** [A] | 0.002 U | - | - | 0.002 U | 0.002 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | 0.002 U | 0.002 U | - | **0.0031** [B] | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | - | **0.0034** [B] | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | MW-3D<br>MW3D-S4-20<br>10/27/2022<br>210464-04<br>17.5 - 20 (ft)<br>738.7 to 736.2<br>Saturated | MW-3D<br>MW3D-S5-25<br>10/27/2022<br>210464-05<br>22.5 - 25 (ft)<br>733.7 to 731.2<br>Saturated | MW-3D<br>MW3D-S11-55<br>10/27/2022<br>210464-11<br>52.5 - 55 (ft)<br>703.7 to 701.2<br>Saturated | MW-3S<br>MW-3S-S1<br>06/27/2022<br>07-016-03<br>3 - 3.8 (ft)<br>753.5 to 752.7<br>Vadose | MW-3S<br>MW-3S-S2<br>06/27/2022<br>07-016-04<br>7 - 7.8 (ft)<br>749.5 to 748.7<br>Saturated | MW-3S<br>MW-3S-S200<br>06/27/2022<br>07-016-06<br>7 - 7.8 (ft)<br>749.5 to 748.7<br>Saturated | MW-3S<br>MW-3S-S3<br>06/27/2022<br>07-016-05<br>12 - 12.8 (ft)<br>744.5 to 743.7<br>Saturated | MW-3S<br>MW-3S-S4<br>06/27/2022<br>206500-09<br>18 - 18.8 (ft)<br>738.5 to 737.7<br>Saturated | MW-4D<br>MW4D-S1-3<br>10/27/2022<br>210464-13<br>2 - 3 (ft)<br>754.3 to 753.3<br>Vadose | MW-4D<br>MW4D-S2-10<br>10/27/2022<br>210464-14<br>10 - 11 (ft)<br>746.3 to 745.3<br>Saturated | MW-4D<br>MW4D-S3-15<br>10/27/2022<br>210464-15<br>12.5 - 15 (ft)<br>743.8 to 741.3<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | - | **0.0029** | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | 0.002 U | 0.002 U | - | **0.0024** | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | 0.002 U | 0.002 U | - | **0.018** | **0.01 J** [A] | **0.034 J** [AF] | 0.002 U | - | - | 0.002 U | 0.002 U |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | 0.002 U | 0.002 U | - | **0.0028** [B] | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.002 U | - | **0.13** | **0.23 J** [A] | **0.89 J** [A] | 0.002 U | - | - | 0.002 U | 0.002 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | 0.002 U | 0.002 U | - | **0.0025** | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | - | **0.065** | **0.49 J** [A] | **2.69 J** [A] | 0.002 U | - | - | 0.002 U | 0.002 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | 0.002 U | **0.0021** | - | 0.002 U | **0.44 J** | **1.6 J** | **0.0026** | - | - | 0.002 U | 0.002 U |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.002 U | - | **0.051** [B] | **0.038 J** [A] | **0.11 J** [A] | 0.002 U | - | - | 0.002 U | 0.002 U |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.002 U | - | **0.005** | **0.002** | **0.003** | 0.00151 U | - | - | 0.002 U | 0.002 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | 5 U | 5 U | 5 U | **42** | **16 J** | **50 J** | 5 U | 5 U | 5 U | 5 U | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | **640** | **310 J** | **1100 J** | 50 U | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | **640** | **310** | **1100** | 250 U | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | 250 U | **682** | **326** [A] | **1150** [A] | 250 U | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | 0.02 U | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | 0.02 U | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | 0.02 U | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | 0.06 U | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | 21.7 U | - | - | 30.9 U | **31.7** | 26.5 U | 21.6 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | 10.9 U | - | - | **76.2** | **107** | **68.6** | 10.8 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | 10.9 U | - | - | **274** | **405** | **292** | 10.8 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | 10.9 U | - | - | **271** | **275** | **267** | 10.8 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | 10.9 U | - | - | **53.9** | **55.2 J** | **40.9 J** | **140** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | 21.7 U | - | - | 30.9 U | 26.8 U | 26.5 U | 21.6 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | 10.9 U | - | - | 15.5 U | **17.1** | 13.3 U | 10.8 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | 10.9 U | - | - | **78.4** | **140** | **86.3** | 10.8 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | 10.9 U | - | - | **237** | **302** | **229** | **11.9** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | 10.9 U | - | - | **57.3** | **40.9** | **34.6** | 10.8 U | - | - | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | 5 U | - | - | 5 U | 5 U | 5 U | 5 U | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | 5 U | - | - | 5 U | 5 UJ | **24 J** | 5 U | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | 5 U | - | - | **5.8** | 5 UJ | **27 J** | 5 U | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | 5 U | - | - | 5 U | 5 U | 5 U | 5 U | - | - | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | 0 U | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | 5 U | - | - | **5.4** | 5 UJ | **20 J** | 5 U | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | 5 U | - | - | **18** | **6.7 J** | **73 J** | 5 U | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | 5 U | - | - | **140** | **74 J** | **470 J** | 5 U | - | - | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | 0 U | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.02 U | - | - | 0.02 U | 0.02 U | 0.02 U | 0.02 U | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | 0.05 U | - | - | 0.059 U | 0.06 U | **0.11** [A] | 0.05 U | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.05 U | - | - | 0.059 U | 0.06 U | 0.051 U | 0.05 U | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | 0.05 U | - | - | 0.059 U | 0.06 UJ | **0.17 J** | 0.05 U | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.05 U | - | - | 0.059 U | 0.06 U | 0.051 U | 0.05 U | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.05 U | - | - | 0.059 U | 0.06 U | 0.051 U | 0.05 U | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | 0.05 U | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | - | **2.26** | - | **1.62 J-** | **1.39 J-** | **1.44 J-** | **1.29 J-** | - | **2.06** | - | - |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | - | **52.7 J+** | - | **77.6** | **46.9** | **56.3** | **35.8** | - | **63 J+** | - | - |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | - | 1 U | - | 1 U | 1 U | 1 U | 1 U | - | 1 U | - | - |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | - | **9.76** | - | **22.8** | **17** | **18.9** | **8.54** | - | **16** | - | - |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | 0.776 U | **1.34 J** [AF] | **3.19 J** [AF] | **5.12** [AF] | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | - | **49** | - | **69** [B] | **47.2** | **50.7** | **40.9** | - | **51** | - | - |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | - | **2.43** | - | **3.37** | **2.62** | **2.89** | **3.42** | - | **2.22** | - | - |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | - | **9.23** | - | **22.6** | **15.8** | **17.1** | **9.08** | - | **15.7** | - | - |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | - | 5 UJ | - | 1 U | 1 U | 1 U | 1 U | - | 5 UJ | - | - |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | - | 1 U | - | 1 UJ | 1 UJ | 1 UJ | 1 UJ | - | 1 U | - | - |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | - | **49.7** | - | **66 J-** | **54.1 J-** | **55.4 J-** | **45.9 J-** | - | **52.4** | - | - |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | MW-4D<br>MW4D-S5-25<br>10/27/2022<br>210464-17<br>22.5 - 25 (ft)<br>733.8 to 731.3<br>Saturated | MW-4D<br>MW4D-S8-40<br>10/27/2022<br>210464-20<br>37.5 - 40 (ft)<br>718.8 to 716.3<br>Saturated | MW-4S<br>MW-4S-S1<br>06/27/2022<br>206500-01<br>2.5 - 3.3 (ft)<br>753.8 to 753<br>Vadose | MW-4S<br>MW-4S-S2<br>06/27/2022<br>07-016-01<br>7 - 7.8 (ft)<br>749.3 to 748.5<br>Saturated | MW-4S<br>MW-4S-S3<br>06/27/2022<br>206500-03<br>11 - 11.8 (ft)<br>745.3 to 744.5<br>Saturated | TP-16<br>TP-16-S2-10<br>05/03/2022<br>205113-02<br>7.5 - 10 (ft)<br>746.9 to 744.4<br>Saturated | TP-17<br>TP-17-S1-5<br>05/05/2022<br>205113-03<br>2.5 - 5 (ft)<br>754.8 to 752.3<br>Vadose | TP-17<br>TP-17-S2-10<br>05/05/2022<br>205113-04<br>7.5 - 10 (ft)<br>749.8 to 747.3<br>Saturated | TP-17<br>TP-17-S3-15<br>05/05/2022<br>205113-05<br>12.5 - 15 (ft)<br>744.8 to 742.3<br>Saturated | TP-18<br>TP-18-S1-5<br>05/04/2022<br>205113-99<br>2.5 - 5 (ft)<br>753.5 to 751<br>Vadose | TP-18<br>TP-18-S2-10<br>05/04/2022<br>205113-100<br>7.5 - 10 (ft)<br>748.5 to 746<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.002 U | 0.002 U | - | 0.002 U | - | - | - | - | - | - | - |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.002 U | 0.002 U | - | 0.002 U | - | - | - | - | - | - | - |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | - | 0.001 U | - | - | - | - | - | - | - |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.25 U | 0.25 U | - | 0.25 U | - | - | - | - | - | - | - |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.25 U | 0.25 U | - | 0.25 U | - | - | - | - | - | - | - |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 0.5 U | 0.5 U | - | 0.5 U | - | - | - | - | - | - | - |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.005 U | 0.005 U | - | 0.005 U | - | - | - | - | - | - | - |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.002 U | 0.002 U | - | 0.002 U | - | - | - | - | - | - | - |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 1 U | 1 U | - | 1 U | - | - | - | - | - | - | - |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 0.5 U | 0.5 U | - | 0.5 U | - | - | - | - | - | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 1 U | 1 U | - | 1 U | - | - | - | - | - | - | - |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 5 U | 5 U | - | 5 U | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.001 U | 0.001 U | - | 0.001 U | - | - | - | - | - | - | - |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 0.5 U | 0.5 U | - | 0.5 U | - | - | - | - | - | - | - |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.1 U | 0.1 U | - | 0.1 U | - | - | - | - | - | - | - |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 0.5 U | 0.5 U | - | 0.5 U | - | - | - | - | - | - | - |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.001 U | 0.001 U | - | 0.001 U | - | - | - | - | - | - | - |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | 0.5 U | 0.5 U | - | 0.5 U | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | 0.001 U | 0.001 U | - | 0.001 U | - | - | - | - | - | - | - |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.25 U | 0.25 U | - | 0.25 U | - | - | - | - | - | - | - |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | 0.25 U | 0.25 U | - | 0.25 U | - | - | - | - | - | - | - |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | 0.002 U | 0.002 U | - | **0.0022** | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.001 U | 0.001 U | - | 0.001 U | - | - | - | - | - | - | - |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | 0.2 U | 0.2 U | - | **0.66 LC**[A] | - | - | - | - | - | - | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.01 U | 0.01 U | - | 0.005 U | - | - | - | - | - | - | - |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.001 U | 0.001 U | - | 0.001 U | - | - | - | - | - | - | - |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | 0.001 U | 0.001 U | - | 0.001 U | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.001 U | 0.001 U | - | 0.001 U | - | - | - | - | - | - | - |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.002 U | - | 0.002 U | - | - | - | - | - | - | - |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.05 U | 0.05 U | - | 0.05 U | - | - | - | - | - | - | - |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.001 U | 0.001 U | - | 0.001 U | - | - | - | - | - | - | - |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 0.5 U | 0.5 U | - | 0.5 U | - | - | - | - | - | - | - |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.001 U | 0.001 UJ | - | 0.001 U | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | 0.002 U | 0.002 U | - | **0.0022** | - | - | - | - | - | - | - |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | MW-4D<br>MW4D-S5-25<br>10/27/2022<br>210464-17<br>22.5 - 25 (ft)<br>733.8 to 731.3<br>Saturated | MW-4D<br>MW4D-S8-40<br>10/27/2022<br>210464-20<br>37.5 - 40 (ft)<br>718.8 to 716.3<br>Saturated | MW-4S<br>MW-4S-S1<br>06/27/2022<br>206500-01<br>2.5 - 3.3 (ft)<br>753.8 to 753<br>Vadose | MW-4S<br>MW-4S-S2<br>06/27/2022<br>07-016-01<br>7 - 7.8 (ft)<br>749.3 to 748.5<br>Saturated | MW-4S<br>MW-4S-S3<br>06/27/2022<br>206500-03<br>11 - 11.8 (ft)<br>745.3 to 744.5<br>Saturated | TP-16<br>TP-16-S2-10<br>05/03/2022<br>205113-02<br>7.5 - 10 (ft)<br>746.9 to 744.4<br>Saturated | TP-17<br>TP-17-S1-5<br>05/05/2022<br>205113-03<br>2.5 - 5 (ft)<br>754.8 to 752.3<br>Vadose | TP-17<br>TP-17-S2-10<br>05/05/2022<br>205113-04<br>7.5 - 10 (ft)<br>749.8 to 747.3<br>Saturated | TP-17<br>TP-17-S3-15<br>05/05/2022<br>205113-05<br>12.5 - 15 (ft)<br>744.8 to 742.3<br>Saturated | TP-18<br>TP-18-S1-5<br>05/04/2022<br>205113-99<br>2.5 - 5 (ft)<br>753.5 to 751<br>Vadose | TP-18<br>TP-18-S2-10<br>05/04/2022<br>205113-100<br>7.5 - 10 (ft)<br>748.5 to 746<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | 0.01 U | - | - | 0.002 U |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | - | - | - | 0.00151 U | - | - | - | 0.00755 U | - | - | 0.00151 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | - | - | 5 U | - | - |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | 0.02 U | - | 0.02 U | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | 0.02 U | - | 0.02 U | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | 0.02 U | - | 0.02 U | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | 0.06 U | - | 0.06 U | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 26 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 13 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 13 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 13 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 13 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 26 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 13 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 13 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **15.8** | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 13 U | - | - | - | - | - | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 5 U | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 5 U | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 5 U | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 5 U | - | - | - | - | - | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 5 U | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 5 U | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 5 U | - | - | - | - | - | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | 0.02 U | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | 0.051 U | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | 0.051 U | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | 0.051 U | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | 0.051 U | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | 0.051 U | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | **2.27** | - | - | **1.3 J-** | - | **1.31 J** | - | **1.22 J** | - | - | - |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | **49.2 J+** | - | - | **41.5** | - | **29.3** | - | **29.8** | - | - | - |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | 1 U | - | - | 1 U | - | 1 U | - | 1 U | - | - | - |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | **13.6** | - | - | **15.2** | - | **11.5 J** | - | **11.2 J** | - | - | - |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | 0.68 U | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | **46.4** | - | - | **44.8** | - | **31** | - | **26.5** | - | - | - |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | **2.49** | - | - | **2.26** | - | **1.75** | - | **1.85** | - | - | - |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | 0.1 U | - | - | - |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | **21.8** | - | - | **17.2** | - | **10.4** | - | **9.53** | - | - | - |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | 5 UJ | - | - | 1 U | - | 1 UJ | - | 1 UJ | - | - | - |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | 1 U | - | - | 1 UJ | - | 1 U | - | 1 U | - | - | - |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | **45.5** | - | - | **61.1 J-** | - | **38.6** | - | **33** | - | - | - |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-19<br>TP-19-S1-5<br>05/04/2022<br>205113-101<br>2.5 - 5 (ft)<br>753 to 750.5<br>Vadose | TP-19<br>TP-19-S2-10<br>05/04/2022<br>205113-102<br>7.5 - 10 (ft)<br>748 to 745.5<br>Saturated | TP-20<br>TP-20-S1-5<br>05/04/2022<br>205113-103<br>2.5 - 5 (ft)<br>753.9 to 751.4<br>Vadose | TP-20<br>TP-20-S1-10<br>05/04/2022<br>205113-104<br>7.5 - 10 (ft)<br>748.9 to 746.4<br>Saturated | TP-21<br>TP-21-S1-5<br>05/05/2022<br>205113-06<br>2.5 - 5 (ft)<br>755.3 to 752.8<br>Vadose | TP-21<br>TP-21-S2-10<br>05/05/2022<br>205113-07<br>7.5 - 10 (ft)<br>750.3 to 747.8<br>Saturated | TP-21<br>TP-21-S200-10<br>05/05/2022<br>205113-08<br>7.5 - 10 (ft)<br>750.3 to 747.8<br>Saturated | TP-21<br>TP-21-S3-15<br>05/05/2022<br>205113-09<br>12.5 - 15 (ft)<br>745.3 to 742.8<br>Saturated | TP-22<br>TP-22-S1-5<br>05/05/2022<br>205113-10<br>2.5 - 5 (ft)<br>755 to 752.5<br>Vadose | TP-22<br>TP-22-S2-10<br>05/05/2022<br>205113-11<br>7.5 - 10 (ft)<br>750 to 747.5<br>Saturated | TP-23<br>TP-23-S1-5<br>05/04/2022<br>205113-105<br>2.5 - 5 (ft)<br>755.6 to 753.1<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | - | - | - | - | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | - |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | - | - | - | - | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | - |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | - | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | - | - | - | - | - | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | - |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | - | - | - | - | - | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | - |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | - | - | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | - | - | - | - | - | 0.01 U | 0.01 U | 0.01 U | 0.01 U | - | - |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | - | - | - | - | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | - |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | - | - | - | - | - | 2 U | 2 U | 2 U | 2 U | - | - |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | - | - | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | 2 U | 2 U | 2 U | 2 U | - | - |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | - | - | - | - | - | 10 U | 10 U | 10 U | 10 U | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | - | - | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Chloroethane | NA | NA | NA | NA | NA | NA | - | - | - | - | - | 0.2 U | 0.2 U | 0.2 U | 0.2 U | - | - |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | - | - | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | - | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | **0.0073 [A]** | **0.0064 [A]** | **0.066 [A]** | 0.002 U | - | - |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | - | - | - | - | - | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | - |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | - | - | - | - | - | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | - |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | 0.004 UJ | 0.004 UJ | **0.053** | 0.004 U | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | - | - | - | - | - | **0.83 J LC [A]** | **0.79 J LC [A]** | 0.4 U | **0.48 J LC [B]** | - | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | 0.01 UJ | 0.01 UJ | **0.2** | 0.01 U | - | - |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | 0.1 UJ | 0.1 UJ | 0.1 U | 0.1 U | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | 0.002 U | 0.002 U | **0.021** | 0.002 U | - | - |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | - | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | - |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | - | - | - | - | - | **0.003 [A]** | 0.002 U | 0.002 U | 0.002 U | - | - |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | - | - | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | - | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | 0.004 U | 0.004 U | **0.074 [A]** | 0.004 U | - | - |
| | | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | **0.0026 J [A]** | **0.061 J [A]** | 0.002 U | 0.002 U | 0.002 U | - |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 UJ | **0.011 J** | 0.002 U | 0.002 U | 0.002 U | - |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | **0.0027** | 0.002 U | 0.002 U | 0.002 U | - |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-19<br>TP-19-S1-5<br>05/04/2022<br>205113-101<br>2.5 - 5 (ft)<br>753 to 750.5<br>Vadose | TP-19<br>TP-19-S2-10<br>05/04/2022<br>205113-102<br>7.5 - 10 (ft)<br>748 to 745.5<br>Saturated | TP-20<br>TP-20-S1-5<br>05/04/2022<br>205113-103<br>2.5 - 5 (ft)<br>753.9 to 751.4<br>Vadose | TP-20<br>TP-20-S1-10<br>05/04/2022<br>205113-104<br>7.5 - 10 (ft)<br>748.9 to 746.4<br>Saturated | TP-21<br>TP-21-S1-5<br>05/05/2022<br>205113-06<br>2.5 - 5 (ft)<br>755.3 to 752.8<br>Vadose | TP-21<br>TP-21-S2-10<br>05/05/2022<br>205113-07<br>7.5 - 10 (ft)<br>750.3 to 747.8<br>Saturated | TP-21<br>TP-21-S200-10<br>05/05/2022<br>205113-08<br>7.5 - 10 (ft)<br>750.3 to 747.8<br>Saturated | TP-21<br>TP-21-S3-15<br>05/05/2022<br>205113-09<br>12.5 - 15 (ft)<br>745.3 to 742.8<br>Saturated | TP-22<br>TP-22-S1-5<br>05/05/2022<br>205113-10<br>2.5 - 5 (ft)<br>755 to 752.5<br>Vadose | TP-22<br>TP-22-S2-10<br>05/05/2022<br>205113-11<br>7.5 - 10 (ft)<br>750 to 747.5<br>Saturated | TP-23<br>TP-23-S1-5<br>05/04/2022<br>205113-105<br>2.5 - 5 (ft)<br>755.6 to 753.1<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | **0.0027** | 0.002 U | 0.002 U | 0.002 U | - |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | **0.0026 J** | **0.072 J** | **0.0043** | 0.002 U | 0.002 U | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 UJ | 0.002 UJ | **0.0043** | 0.002 U | 0.002 U | - |
| Phenanthrene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | **0.0026** | 0.002 U | 0.002 U | 0.002 U | - |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | - | 0.00151 U | - | 0.00151 U | - | 0.00151 U | 0.00151 U | 0.00151 U | 0.00151 U | 0.00151 U | - |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | - | - | 5 U | - | **35** | 5 U | **8.3** | **10** | 5 U | 5 U | - |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | **210** | 50 U | 50 U | 50 UJ | **160 J** | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | **1100** | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | **1310** | 250 U | 250 U | 250 U | **160** | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | **1310** [B] | 250 U | **35** | 250 U | **168.3** | **10** | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 26.3 U | - | 28.9 U | 21.7 U | 22.9 U | 21.1 U | 27.8 U | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 13.2 U | - | 14.5 U | 10.9 U | 11.4 U | 10.6 U | 13.9 U | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 13.2 U | - | 14.5 U | 10.9 U | 11.4 U | 10.6 U | 13.9 U | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 13.2 U | - | 14.5 U | 10.9 U | 11.4 U | 10.6 U | 13.9 U | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | **23.1** | - | 14.5 U | 10.9 U | 11.4 U | 10.6 U | 13.9 U | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | 26.3 U | - | 28.9 U | 21.7 U | 22.9 U | 21.1 U | 27.8 U | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | 13.2 U | - | 14.5 U | 10.9 U | 11.4 U | 10.6 U | 13.9 U | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | 13.2 U | - | 14.5 U | 10.9 U | 11.4 U | 10.6 U | 13.9 U | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | 13.2 U | - | 14.5 U | 10.9 U | 11.4 U | 10.6 U | 13.9 U | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | 13.2 U | - | 14.5 U | 10.9 U | 11.4 U | 10.6 U | 13.9 U | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 3.25 UJ | - | 5.22 UJ | 2.88 UJ | 3.37 UJ | 2.02 UJ | 2.76 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 1.95 UJ | - | 3.13 UJ | 1.73 UJ | 2.02 UJ | 1.21 UJ | 1.66 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 3.25 UJ | - | 5.22 UJ | 2.88 UJ | 3.37 UJ | 2.02 UJ | 2.76 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | **2 J** | - | 1.04 UJ | 0.576 UJ | 0.675 UJ | **0.591 J** | 0.553 UJ | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | 3.9 UJ | - | 6.26 UJ | 3.46 UJ | 4.05 UJ | 2.43 UJ | 3.32 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **6.22 J** | - | **1.92 J** | **1.56 J** | **0.764 J** | **1.28 J** | 0.553 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **40.7 J** | - | **5.7 J** | **2.09 J** | **1.82 J** | **2.73 J** | **0.794 J** | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | - | **1.44 J** | - | - | - | **0.879 J** | **1.08 J** | - | **1.71 J** | - | - |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | - | **29.3** | - | - | - | **28.4** | **32.4** | - | **137** | - | - |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | - | 1 U | - | - | - | 1 U | 1 U | - | 1 U | - | - |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | - | **11.5 J** | - | - | - | **12.1 J** | **10.9 J** | - | **26.5 J** | - | - |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | - | **28.3** | - | - | - | **27.7** | **26.3** | - | **71.6** [B] | - | - |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | - | **2.4** | - | - | - | **3.17 J** | **3.35 J** | - | **3.91** | - | - |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | **0.25** [B] | - | - |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | - | **10.4** | - | - | - | **9.47 J** | **9.3 J** | - | **59.5** [BD] | - | - |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | - | 1 UJ | - | - | - | 1 UJ | 1 UJ | - | 1 UJ | - | - |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | - | 1 U | - | - | - | 1 U | 1 U | - | 1 U | - | - |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | - | **36.4** | - | - | - | **36.4** | **40.9** | - | **64.4** | - | - |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-23<br>TP-23-S2-10<br>05/04/2022<br>205113-106<br>7.5 - 10 (ft)<br>750.6 to 748.1<br>Saturated | TP-24<br>TP-24-S1-2.5<br>05/05/2022<br>205113-13<br>0 - 2.5 (ft)<br>757.7 to 755.2<br>Vadose | TP-24<br>TP-24-S100-2.5<br>05/05/2022<br>205113-14<br>0 - 2.5 (ft)<br>757.7 to 755.2<br>Vadose | TP-24<br>TP-24-S2-5<br>05/05/2022<br>205113-15<br>2.5 - 5 (ft)<br>755.2 to 752.7<br>Vadose | TP-24<br>TP-24-S3-10<br>05/05/2022<br>205113-16<br>7.5 - 10 (ft)<br>750.2 to 747.7<br>Saturated | TP-25<br>TP-25-S1-2.5<br>05/05/2022<br>205113-18<br>0 - 2.5 (ft)<br>758.1 to 755.6<br>Vadose | TP-25<br>TP-25-S2-5<br>05/05/2022<br>205113-19<br>2.5 - 5 (ft)<br>755.6 to 753.1<br>Vadose | TP-25<br>TP-25-S4-15<br>05/05/2022<br>205113-21<br>12.5 - 15 (ft)<br>745.6 to 743.1<br>Saturated | TP-26<br>TP-26-S1-2.5<br>05/05/2022<br>205113-22<br>0 - 2.5 (ft)<br>758 to 755.5<br>Vadose | TP-26<br>TP-26-S2-5<br>05/05/2022<br>205113-23<br>2.5 - 5 (ft)<br>755.5 to 753<br>Vadose | TP-27<br>TP-27-S1-5<br>05/04/2022<br>205113-107<br>5 - 6 (ft)<br>753.1 to 752.1<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | - | - | 0.004 U | - | - |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | - | - | 0.004 U | - | - |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | - | 0.002 U | - | - |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.5 U | 0.5 UJ | 0.5 U | 0.5 U | - | 0.5 U | - | - | 0.5 U | - | - |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.5 U | 0.5 UJ | 0.5 U | 0.5 U | - | 0.5 U | - | - | 0.5 U | - | - |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.1 U | 0.1 UJ | **0.62 J** | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 1 U | 1 UJ | 1 U | 1 U | - | 1 U | - | - | 1 U | - | - |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | - | 0.01 U | - | - | 0.01 U | - | - |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | - | - | 0.004 U | - | - |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 2 U | 2 U | 2 U | 2 U | - | 2 U | - | - | 2 U | - | - |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | - | 1 U | - | - | 1 U | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | 0.1 UJ | **0.23 J** | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 2 U | 2 U | 2 U | 2 U | - | 2 U | - | - | 2 U | - | - |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 10 U | 10 U | 10 U | 10 U | - | 10 U | - | - | 10 U | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.002 U | **0.0029** [B] | 0.002 U | 0.002 U | - | 0.002 U | - | - | 0.002 U | - | - |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | - | 1 U | - | - | 1 U | - | - |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | - | 0.2 U | - | - | 0.2 U | - | - |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | - | 1 U | - | - | 1 U | - | - |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.002 U | **0.0034** | 0.002 U | 0.002 U | - | 0.002 U | - | - | 0.002 U | - | - |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | - | 1 U | - | - | 1 U | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | 0.002 U | **0.0076 J-** | **0.005 J** | 0.002 U | - | 0.002 U | - | - | 0.002 U | - | - |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.5 U | 0.5 UJ | 0.5 U | 0.5 U | - | 0.5 U | - | - | 0.5 U | - | - |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | - | - | 0.5 U | - | - |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | 0.1 UJ | **0.1** | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | 0.004 U | **0.023 J-** | 0.004 UJ | 0.004 U | - | 0.004 U | - | - | 0.004 U | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | - | 0.002 U | - | - |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | 0.4 U | **1.1 J LC** [B] | **2.8 J LC** [B] | **1.4 J LC** [B] | - | 0.4 U | - | - | **0.97 J LC** [B] | - | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.01 U | **0.047 J-** | 0.01 UJ | 0.01 U | - | 0.01 U | - | - | 0.01 U | - | - |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | 0.1 UJ | **0.2** | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.002 U | **0.0075 J-** | **0.0032 J** | 0.002 U | - | 0.002 U | - | - | **0.003** | - | - |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | 0.002 U | 0.002 UJ | **0.0074 J** | **0.0026** | - | 0.002 U | - | - | 0.002 U | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | - | - | 0.004 U | - | - |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | - | 0.1 U | - | - |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.002 U | **0.015 J** [B] | **0.0029 J** [B] | 0.002 U | - | 0.002 U | - | - | 0.002 U | - | - |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 1 U | 1 U | 1 U | 1 U | - | 1 U | - | - | 1 U | - | - |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | - | 0.002 U | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | 0.004 U | **0.0305** | **0.0032** | 0.004 U | - | 0.004 U | - | - | **0.003** | - | - |
| | | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | 0.002 U | 0.2 UJ | 0.2 UJ | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | 0.002 U | 0.2 UJ | 0.2 UJ | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-23<br>TP-23-S2-10<br>05/04/2022<br>205113-106<br>7.5 - 10 (ft)<br>750.6 to 748.1<br>Saturated | TP-24<br>TP-24-S1-2.5<br>05/05/2022<br>205113-13<br>0 - 2.5 (ft)<br>757.7 to 755.2<br>Vadose | TP-24<br>TP-24-S100-2.5<br>05/05/2022<br>205113-14<br>0 - 2.5 (ft)<br>757.7 to 755.2<br>Vadose | TP-24<br>TP-24-S2-5<br>05/05/2022<br>205113-15<br>2.5 - 5 (ft)<br>755.2 to 752.7<br>Vadose | TP-24<br>TP-24-S3-10<br>05/05/2022<br>205113-16<br>7.5 - 10 (ft)<br>750.2 to 747.7<br>Saturated | TP-25<br>TP-25-S1-2.5<br>05/05/2022<br>205113-18<br>0 - 2.5 (ft)<br>758.1 to 755.6<br>Vadose | TP-25<br>TP-25-S2-5<br>05/05/2022<br>205113-19<br>2.5 - 5 (ft)<br>755.6 to 753.1<br>Vadose | TP-25<br>TP-25-S4-15<br>05/05/2022<br>205113-21<br>12.5 - 15 (ft)<br>745.6 to 743.1<br>Saturated | TP-26<br>TP-26-S1-2.5<br>05/05/2022<br>205113-22<br>0 - 2.5 (ft)<br>758 to 755.5<br>Vadose | TP-26<br>TP-26-S2-5<br>05/05/2022<br>205113-23<br>2.5 - 5 (ft)<br>755.5 to 753<br>Vadose | TP-27<br>TP-27-S1-5<br>05/04/2022<br>205113-107<br>5 - 6 (ft)<br>753.1 to 752.1<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | 0.002 U | 0.2 UJ | 0.2 UJ | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | 0.002 U | 0.2 UJ | 0.2 UJ | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.2 UJ | 0.2 UJ | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | 0.2 UJ | 0.2 UJ | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | 0.002 U | 0.2 U | 0.2 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | 0.2 UJ | 0.2 UJ | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | 0.00151 U | 0.151 U | 0.151 U | 0.00151 U | 0.00151 U | - | 0.00151 U | 0.00151 U | 0.00151 U | 0.00151 U | 0.00151 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | 5 U | **90 J** | **290 J** | **7.8** | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | **1000** [D] | **1100** [D] | **94** | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | **1700** | **2000** | **610** | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | **2700** | **3100** | **704** | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | **2790** [B] | **3390** [B] | **711.8** [B] | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | **63.2** | **51.5** | 26.1 U | - | 26.8 U | - | - | 26.6 U | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | **239 J+** | **250 J+** | 13.1 U | - | 13.4 U | - | - | 13.3 U | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | **551** | **622** | **13.2** | - | 13.4 U | - | - | 13.3 U | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | **140** | **186** | 13.1 U | - | 13.4 U | - | - | 13.3 U | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | **685** | **954** | **50.3** | - | 13.4 U | - | - | 13.3 U | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | 27 U | 29.2 U | 26.1 U | - | 26.8 U | - | - | 26.6 U | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | **13.8** | 14.6 U | 13.1 U | - | 13.4 U | - | - | 13.3 U | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | **109** | **107** | 13.1 U | - | 13.4 U | - | - | 13.3 U | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | **189** | **294** | 13.1 U | - | 13.4 U | - | - | 13.3 U | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | **243** | **356** | 13.1 U | - | 13.4 U | - | - | 13.3 U | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | 3.42 UJ | 4.14 UJ | 2.23 UJ | - | 3.36 UJ | - | - | 2.59 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | 2.05 UJ | 2.49 UJ | 1.34 UJ | - | 2.02 UJ | - | - | 1.55 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | 3.42 UJ | 4.14 UJ | 2.23 UJ | - | 3.36 UJ | - | - | 2.59 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | **22.3 J** | 0.828 UJ | 0.447 UJ | - | 0.672 UJ | - | - | 0.518 UJ | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | **5.88 J** | **9.02 J** | 2.68 UJ | - | 4.03 UJ | - | - | 3.11 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | **70.3 J** | **135 J** | **1.02 J** | - | 0.672 UJ | - | - | **1.18 J** | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | **1040 J** | **1900 J** | **25.2 J** | - | 0.672 UJ | - | - | **2.18 J** | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | **0.976 J** | **4.33 J** | **4.13 J** | - | - | - | **1.24 J** | - | - | **1.45 J** | **1.33 J** |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | **51.1** | **66.7** | **106** | - | - | - | **45.5** | - | - | **68** | **54.3** |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | 1 U | 1 U | 1 U | - | - | - | 1 U | - | - | 1 U | 1 U |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | **15 J** | **10.9 J** | **18.1 J** | - | - | - | **17.7 J** | - | - | **10.2 J** | **18 J** |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | **37.7** | **56.2 J** [B] | **116 J** [B] | - | - | - | **54.5** [B] | - | - | **31.2** | **69.6** [B] |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | **2.92** | **21.5 J** | **157 J** [E] | - | - | - | **2.57** | - | - | **2.09** | **3.28** |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | 0.1 U | 0.1 U | 0.1 U | - | - | - | 0.1 U | - | - | 0.1 U | 0.1 U |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | **12.1** | **20.8** | **22** | - | - | - | **17.8** | - | - | **8.95** | **19.5** |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | 1 UJ | 1 UJ | 1 UJ | - | - | - | 1 UJ | - | - | 1 UJ | 1 UJ |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | 1 U | 1 U | 1 U | - | - | - | 1 U | - | - | 1 U | 1 U |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | **40** | **132** [B] | **218** [B] | - | - | - | **53.1** | - | - | **30.9** | **46.5** |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-27<br>TP-27-S2-10<br>05/04/2022<br>205113-108<br>9 - 10 (ft)<br>749.1 to 748.1<br>Saturated | TP-28<br>TP-28-S1-5<br>05/05/2022<br>205113-26<br>2.5 - 5 (ft)<br>751.9 to 749.4<br>Saturated | TP-28<br>TP-28-S2-10<br>05/05/2022<br>205113-27<br>7.5 - 10 (ft)<br>746.9 to 744.4<br>Saturated | TP-29<br>TP-29-S1-5<br>05/04/2022<br>205113-109<br>5 - 6 (ft)<br>752.9 to 751.9<br>Vadose | TP-29<br>TP-29-S2-10<br>05/04/2022<br>205113-110<br>10 - 11 (ft)<br>747.9 to 746.9<br>Saturated | TP-30<br>TP-30-S2-10<br>05/03/2022<br>205113-29<br>7.5 - 10 (ft)<br>746.9 to 744.4<br>Saturated | TP-30<br>TP-30-S1-5<br>05/05/2022<br>205113-28<br>2.5 - 5 (ft)<br>751.9 to 749.4<br>Saturated | TP-31<br>TP-31-S1-2.5<br>05/03/2022<br>205113-30<br>2 - 2.5 (ft)<br>755.9 to 755.4<br>Vadose | TP-31<br>TP-31-S2-5<br>05/03/2022<br>205113-31<br>4 - 5 (ft)<br>753.9 to 752.9<br>Vadose | TP-32<br>TP-32-S1-2.5<br>05/03/2022<br>205113-32<br>2 - 2.5 (ft)<br>755.8 to 755.3<br>Vadose | TP-32<br>TP-32-S2-5<br>05/03/2022<br>205113-33<br>4.5 - 5.5 (ft)<br>753.3 to 752.3<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | - | - | - | 0.004 U | - | - | - | - | - | - | - |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | - | - | - | 0.004 U | - | - | - | - | - | - | - |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | - | - | - | - |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | - | - | - | 0.5 U | - | - | - | - | - | - | - |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | - | - | - | 0.5 U | - | - | - | - | - | - | - |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | - | - | - | 1 U | - | - | - | - | - | - | - |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | - | - | - | 0.01 U | - | - | - | - | - | - | - |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | - | - | - | 0.004 U | - | - | - | - | - | - | - |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | - | - | - | 2 U | - | - | - | - | - | - | - |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | - | - | - | 1 U | - | - | - | - | - | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | - | - | - | 2 U | - | - | - | - | - | - | - |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | - | - | - | 10 U | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | 0.002 U | - | - | - | - | - | - | - |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | - | - | - | 1 U | - | - | - | - | - | - | - |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Chloroethane | NA | NA | NA | NA | NA | NA | - | - | - | 0.2 U | - | - | - | - | - | - | - |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | - | - | - | 1 U | - | - | - | - | - | - | - |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | - | - | - | - |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | - | - | - | 1 U | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | - | - | - | - |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | - | - | - | 0.5 U | - | - | - | - | - | - | - |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | - | - | - | 0.5 U | - | - | - | - | - | - | - |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | 0.004 U | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | - | - | - | - |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | - | - | - | **0.85 J LC** [B] | - | - | - | - | - | - | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | - | 0.01 U | - | - | - | - | - | - | - |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | 0.002 U | - | - | - | - | - | - | - |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | - | - | - | 0.004 U | - | - | - | - | - | - | - |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | 0.1 U | - | - | - | - | - | - | - |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | - | - | - | - |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | - | - | - | 1 U | - | - | - | - | - | - | - |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | - | - | - | 0.002 U | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | 0.004 U | - | - | - | - | - | - | - |
| | | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | - | 0.002 U | - | **0.0023** [B] | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | - | 0.002 U | - | **0.0042** [B] | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | - | 0.002 U | - | **0.0039** [B] | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-27<br>TP-27-S2-10<br>05/04/2022<br>205113-108<br>9 - 10 (ft)<br>749.1 to 748.1<br>Saturated | TP-28<br>TP-28-S1-5<br>05/05/2022<br>205113-26<br>2.5 - 5 (ft)<br>751.9 to 749.4<br>Saturated | TP-28<br>TP-28-S2-10<br>05/05/2022<br>205113-27<br>7.5 - 10 (ft)<br>746.9 to 744.4<br>Saturated | TP-29<br>TP-29-S1-5<br>05/04/2022<br>205113-109<br>5 - 6 (ft)<br>752.9 to 751.9<br>Vadose | TP-29<br>TP-29-S2-10<br>05/04/2022<br>205113-110<br>10 - 11 (ft)<br>747.9 to 746.9<br>Saturated | TP-30<br>TP-30-S2-10<br>05/03/2022<br>205113-29<br>7.5 - 10 (ft)<br>746.9 to 744.4<br>Saturated | TP-30<br>TP-30-S1-5<br>05/05/2022<br>205113-28<br>2.5 - 5 (ft)<br>751.9 to 749.4<br>Saturated | TP-31<br>TP-31-S1-2.5<br>05/03/2022<br>205113-30<br>2 - 2.5 (ft)<br>755.9 to 755.4<br>Vadose | TP-31<br>TP-31-S2-5<br>05/03/2022<br>205113-31<br>4 - 5 (ft)<br>753.9 to 752.9<br>Vadose | TP-32<br>TP-32-S1-2.5<br>05/03/2022<br>205113-32<br>2 - 2.5 (ft)<br>755.8 to 755.3<br>Vadose | TP-32<br>TP-32-S2-5<br>05/03/2022<br>205113-33<br>4.5 - 5.5 (ft)<br>753.3 to 752.3<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | **0.0025** | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | - | 0.002 U | - | **0.0041** | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Phenanthrene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | - | 0.002 U | - | **0.0068** | 0.002 U | - | 0.002 U | 0.002 U | - | 0.002 U | - |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | - | 0.00151 U | - | **0.003** | 0.00151 U | - | 0.00151 U | 0.00151 U | - | 0.00151 U | - |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | - | 5 U | - | **8.5** | 5 U | - | 5 U | - | - | - | - |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | **86** | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | **86** | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | 250 U | **94.5** | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 20.8 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | **13.8** | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | **35.7** | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 10.4 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 10.4 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 20.8 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 10.4 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 10.4 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **11.2** | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 10.4 U | - | - | - | - | - | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 2.06 UJ | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 1.24 UJ | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 2.06 UJ | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | **0.496 J** | - | - | - | - | - | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 2.47 UJ | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **2.88 J** | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **11.4 J** | - | - | - | - | - | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | - | **1.37 J** | - | **1.65 J** | - | - | **0.918 J** | **1.42 J** | - | **2.72 J** | - |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | - | **45.2** | - | **89.7** | - | - | **96.5** | **64.9** | - | **102** | - |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | - | 1 U | - | 1 U | - | - | 1 U | 1 U | - | 1 U | - |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | - | **22.8 J** | - | **17.3 J** | - | - | **20.4 J** | **7.44 J** | - | **20.3 J** | - |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | - | **56.6** [A] | - | **84.1** [B] | - | - | **26** | **33.7** | - | **72.1** [B] | - |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | - | **2.66** | - | **11.6** | - | - | **2.58** | **4.44** | - | **5.71** | - |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | 0.1 U | - | 0.1 U | - | - | 0.1 U | 0.1 U | - | 0.1 U | - |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | - | **18.5** | - | **20** | - | - | **13.9** | **6.85** | - | **21.8** | - |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | - | 1 UJ | - | 1 UJ | - | - | 1 UJ | 1 UJ | - | 1 UJ | - |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | - | 1 U | - | 1 U | - | - | 1 U | 1 U | - | 1 U | - |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | - | **57.1** | - | **64.1** | - | - | **45.5** | **30.6** | - | **52.2** | - |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-33<br>TP-33-S1-2.5<br>05/03/2022<br>205113-34<br>1.5 - 2.5 (ft)<br>756.5 to 755.5<br>Vadose | TP-33<br>TP-33-S2-5<br>05/03/2022<br>205113-35<br>4 - 5 (ft)<br>754 to 753<br>Vadose | TP-34<br>TP-34-S1-2.5<br>05/03/2022<br>205113-36<br>1.5 - 2.5 (ft)<br>756.5 to 755.5<br>Vadose | TP-34<br>TP-34-S2-5<br>05/03/2022<br>205113-37<br>5 - 6 (ft)<br>753 to 752<br>Vadose | TP-35<br>TP-35-S1-5<br>05/03/2022<br>205113-39<br>4 - 6 (ft)<br>753.8 to 751.8<br>Vadose | TP-35<br>TP-35-S2-10<br>05/03/2022<br>205113-40<br>9 - 10 (ft)<br>748.8 to 747.8<br>Vadose | TP-36<br>TP-36-S1-3.5<br>05/02/2022<br>205113-41<br>0 - 3.5 (ft)<br>758 to 754.5<br>Vadose | TP-36<br>TP-36-S2-10.5<br>05/02/2022<br>205113-42<br>9 - 10 (ft)<br>749 to 748<br>Saturated | TP-36B<br>TP-36B-S1-5<br>05/03/2022<br>205113-43<br>4 - 5 (ft)<br>754 to 753<br>Saturated | TP-36B<br>TP-36B-S2-10<br>05/03/2022<br>205113-44<br>9 - 10 (ft)<br>749 to 748<br>Saturated | TP-37<br>TP-37-S1-2.5<br>05/02/2022<br>205113-45<br>0 - 2.5 (ft)<br>757.6 to 755.1<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | - | - | 0.004 U | 0.004 U | - | - | 0.004 U | - | 0.004 U | - | - |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | - | - | 0.004 U | 0.004 U | - | - | 0.004 U | - | 0.004 U | - | - |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | - | - | 0.002 U | 0.002 U | - | - | 0.002 U | - | 0.002 U | - | - |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | - | - | 0.5 UJ | 0.5 U | - | - | 0.5 U | - | 0.5 U | - | - |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | - | - | 0.5 UJ | 0.5 U | - | - | 0.5 U | - | 0.5 U | - | - |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | - | - | **1.1 J-** | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | - | - | 1 UJ | 1 U | - | - | 1 U | - | 1 U | - | - |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | - | - | 0.01 U | 0.01 U | - | - | 0.01 U | - | 0.01 U | - | - |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | - | - | 0.004 U | 0.004 U | - | - | 0.004 U | - | 0.004 U | - | - |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | - | - | 2 U | 2 U | - | - | 2 U | - | 2 U | - | - |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | - | - | 1 U | 1 U | - | - | 1 U | - | 1 U | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | - | - | 2 U | 2 U | - | - | 2 U | - | 2 U | - | - |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | - | - | 10 U | 10 U | - | - | 10 U | - | 10 U | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | 0.002 U | 0.002 U | - | - | 0.002 U | - | 0.002 U | - | - |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | - | - | 1 U | 1 U | - | - | 1 U | - | 1 U | - | - |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Chloroethane | NA | NA | NA | NA | NA | NA | - | - | 0.2 U | 0.2 U | - | - | 0.2 U | - | 0.2 U | - | - |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | - | - | 1 U | 1 U | - | - | 1 U | - | 1 U | - | - |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | - | - | 0.002 U | 0.002 U | - | - | 0.002 U | - | 0.002 U | - | - |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | - | - | **0.54** | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | - | - | 1 U | 1 U | - | - | 1 U | - | 1 U | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | **0.0076 J-** | 0.002 U | - | - | 0.002 U | - | 0.002 U | - | - |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | - | - | 0.5 UJ | 0.5 U | - | - | 0.5 U | - | 0.5 U | - | - |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | - | - | 0.5 U | 0.5 U | - | - | 0.5 U | - | 0.5 U | - | - |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | **0.028 J-** | 0.004 U | - | - | 0.004 U | - | 0.004 U | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | 0.002 U | 0.002 U | - | - | 0.002 U | - | 0.002 U | - | - |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | - | - | 0.4 U | **0.59 J LC [B]** | - | - | 0.4 U | - | 0.4 U | - | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | 0.01 UJ | 0.01 U | - | - | 0.01 U | - | 0.01 U | - | - |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | **0.021 J-** | 0.002 U | - | - | 0.002 U | - | 0.002 U | - | - |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | - | - | 0.1 UJ | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | - | - | 0.002 U | 0.002 U | - | - | 0.002 U | - | 0.002 U | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | - | - | 0.004 U | 0.004 U | - | - | 0.004 U | - | 0.004 U | - | - |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | - | 0.1 U | - | - |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | - | - | 0.002 U | 0.002 U | - | - | 0.002 U | - | 0.002 U | - | - |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | - | - | 1 U | 1 U | - | - | 1 U | - | 1 U | - | - |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | - | - | 0.002 U | 0.002 U | - | - | 0.002 U | - | 0.002 U | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | **0.049** | 0.004 U | - | - | 0.004 U | - | 0.004 U | - | - |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-33<br>TP-33-S1-2.5<br>05/03/2022<br>205113-34<br>1.5 - 2.5 (ft)<br>756.5 to 755.5<br>Vadose | TP-33<br>TP-33-S2-5<br>05/03/2022<br>205113-35<br>4 - 5 (ft)<br>754 to 753<br>Vadose | TP-34<br>TP-34-S1-2.5<br>05/03/2022<br>205113-36<br>1.5 - 2.5 (ft)<br>756.5 to 755.5<br>Vadose | TP-34<br>TP-34-S2-5<br>05/03/2022<br>205113-37<br>5 - 6 (ft)<br>753 to 752<br>Vadose | TP-35<br>TP-35-S1-5<br>05/03/2022<br>205113-39<br>4 - 6 (ft)<br>753.8 to 751.8<br>Vadose | TP-35<br>TP-35-S2-10<br>05/03/2022<br>205113-40<br>9 - 10 (ft)<br>748.8 to 747.8<br>Vadose | TP-36<br>TP-36-S1-3.5<br>05/02/2022<br>205113-41<br>0 - 3.5 (ft)<br>758 to 754.5<br>Vadose | TP-36<br>TP-36-S2-10.5<br>05/02/2022<br>205113-42<br>9 - 10 (ft)<br>749 to 748<br>Saturated | TP-36B<br>TP-36B-S1-5<br>05/03/2022<br>205113-43<br>4 - 5 (ft)<br>754 to 753<br>Saturated | TP-36B<br>TP-36B-S2-10<br>05/03/2022<br>205113-44<br>9 - 10 (ft)<br>749 to 748<br>Saturated | TP-37<br>TP-37-S1-2.5<br>05/02/2022<br>205113-45<br>0 - 2.5 (ft)<br>757.6 to 755.1<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | - | 0.2 U | 0.002 U | - | - | 0.1 U | 0.002 U | 0.002 U | - | 0.002 U |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | 0.00151 U | - | 0.151 U | 0.00151 U | - | - | 0.0755 U | 0.00151 U | 0.00151 U | - | 0.00151 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | 5 U | - | **1100** | 5 U | - | - | **130** | 5 U | 5 U | - | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | **1500** | 50 U | 50 U | 50 U | **330** | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | **2600** | 250 U | 250 U | 250 U | **630** | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | **4100** | 250 U | 250 U | 250 U | **960** | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | **5200** [B] | 250 U | 250 U | 250 U | **1090** [B] | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | **50.3** | - | - | - | 30.7 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | **224 J+** | - | - | - | **106 J+** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | **557** | - | - | - | **211** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | **250** | - | - | - | **167** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | **535** | - | - | - | **157** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | 23.3 U | - | - | - | 30.7 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **14.3** | - | - | - | 15.3 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **124** | - | - | - | **39.3** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **505** | - | - | - | **206** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **195** | - | - | - | 15.3 U | - | - | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 3.09 U | - | - | - | 3.41 U | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | 1.85 U | - | - | - | 2.04 U | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | **17.2 J+** | - | - | - | **5.69** | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | **88 J+** | - | - | - | **77.2** | - | - | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **41.3 J+** | - | - | - | **26.3** | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **500 J+** | - | - | - | **390** | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | **1630 J+** | - | - | - | **1030 J** | - | - | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | **1.47 J** | - | **1.95 J** | - | - | - | **3.59 J** | - | **3.76 J** | - | **0.931 J** |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | **43.3** | - | **71.8** | - | - | - | **88.8** | - | **71.9** | - | **95.6** |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | 1 U | - | 1 U | - | - | - | 1 U | - | 1 U | - | 1 U |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | **8.42 J** | - | **13.7 J** | - | - | - | **19.9 J** | - | **19.2 J** | - | **17.5 J** |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | **34.5** | - | **48.9** | - | - | - | **67.9** [B] | - | **85.9** [A] | - | **38.2** |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | **5.95** | - | **68.8** | - | - | - | **5.48** | - | **4.22** | - | **5.08** |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | 0.1 U | - | 0.1 U | - | - | - | 0.1 U | - | 0.1 U | - | 0.1 U |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | **7.73** | - | **13.7** | - | - | - | **21.5** | - | **21.2** | - | **17.5** |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | 1 UJ | - | 1 UJ | - | - | - | 1 UJ | - | 1 UJ | - | 1 UJ |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | 1 U | - | 1 U | - | - | - | 1 U | - | 1 U | - | 1 U |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | **48.7** | - | **106** [B] | - | - | - | **262** [B] | - | **55.6** | - | **45.8** |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-37<br>TP-37-S2-5<br>05/02/2022<br>205113-46<br>2.5 - 5 (ft)<br>755.1 to 752.6<br>Vadose | TP-38<br>TP-38-S1-2.5<br>05/02/2022<br>205113-111<br>0 - 2.5 (ft)<br>757.9 to 755.4<br>Vadose | TP-38<br>TP-38-S2-5.0<br>05/02/2022<br>205113-112<br>2.5 - 5 (ft)<br>755.4 to 752.9<br>Vadose | TP-38<br>TP-38-S200<br>05/02/2022<br>205113-113<br>2.5 - 5 (ft)<br>755.4 to 752.9<br>Vadose | TP-39<br>TP-39-S1-2.5<br>05/02/2022<br>205113-47<br>0 - 2.5 (ft)<br>757.8 to 755.3<br>Vadose | TP-39<br>TP-39-S2-5<br>05/02/2022<br>205113-48<br>2.5 - 5 (ft)<br>755.3 to 752.8<br>Vadose | TP-40<br>TP-40-S1-5<br>05/02/2022<br>205113-49<br>2.5 - 5 (ft)<br>734.5 to 732<br>Vadose | TP-40<br>TP-40-S2-10<br>05/02/2022<br>205113-50<br>7.5 - 10 (ft)<br>729.5 to 727<br>Saturated | TP-41<br>TP-41-S1-5<br>05/02/2022<br>205113-51<br>2.5 - 5 (ft)<br>742.5 to 740<br>Saturated | TP-41<br>TP-41-S2-10<br>05/02/2022<br>205113-52<br>7.5 - 10 (ft)<br>737.5 to 735<br>Saturated | TP-42<br>TP-42-S1-2.5<br>05/04/2022<br>205113-114<br>2.5 - 3.5 (ft)<br>739.1 to 738.1<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.004 U |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.004 U |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.002 U |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.5 U |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.5 U |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 1 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.01 U |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.004 U |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 2 U |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 1 U |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 2 U |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 10 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | **0.0022** |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 1 U |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Chloroethane | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.2 U |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 1 U |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.002 U |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 1 U |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **0.004** |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.5 U |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.5 U |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **0.0088** |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.002 U |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.4 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **0.024** |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **0.0064** |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.002 U |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.004 U |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.1 U |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **0.0031** [A] |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 1 U |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.002 U |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **0.0152** |
| | | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-37<br>TP-37-S2-5<br>05/02/2022<br>205113-46<br>2.5 - 5 (ft)<br>755.1 to 752.6<br>Vadose | TP-38<br>TP-38-S1-2.5<br>05/02/2022<br>205113-111<br>0 - 2.5 (ft)<br>757.9 to 755.4<br>Vadose | TP-38<br>TP-38-S2-5.0<br>05/02/2022<br>205113-112<br>2.5 - 5 (ft)<br>755.4 to 752.9<br>Vadose | TP-38<br>TP-38-S200<br>05/02/2022<br>205113-113<br>2.5 - 5 (ft)<br>755.4 to 752.9<br>Vadose | TP-39<br>TP-39-S1-2.5<br>05/02/2022<br>205113-47<br>0 - 2.5 (ft)<br>757.8 to 755.3<br>Vadose | TP-39<br>TP-39-S2-5<br>05/02/2022<br>205113-48<br>2.5 - 5 (ft)<br>755.3 to 752.8<br>Vadose | TP-40<br>TP-40-S1-5<br>05/02/2022<br>205113-49<br>2.5 - 5 (ft)<br>734.5 to 732<br>Vadose | TP-40<br>TP-40-S2-10<br>05/02/2022<br>205113-50<br>7.5 - 10 (ft)<br>729.5 to 727<br>Saturated | TP-41<br>TP-41-S1-5<br>05/02/2022<br>205113-51<br>2.5 - 5 (ft)<br>742.5 to 740<br>Saturated | TP-41<br>TP-41-S2-10<br>05/02/2022<br>205113-52<br>7.5 - 10 (ft)<br>737.5 to 735<br>Saturated | TP-42<br>TP-42-S1-2.5<br>05/04/2022<br>205113-114<br>2.5 - 3.5 (ft)<br>739.1 to 738.1<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | **1.9** [A] |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | 1 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | **1.7** |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - | 0.002 U | - | **2.8** [A] |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | - | - | 0.00151 U | 0.00151 U | 0.00151 U | - | 0.00151 U | - | 0.00151 U | - | **0.769** [A] |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | - | - | 5 U | 5 U | 5 U | - | 5 U | - | 5 U | - | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | **1600** |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | **6300** |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | **7900** |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | **7900** [A] |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 23.2 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **60.1** |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **382** |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **531** |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **1670** |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 23.2 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 11.6 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **136** |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **1490** |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **3310** |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 2.48 UJ |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 1.49 UJ |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 2.48 UJ |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 0.495 UJ |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | 2.97 UJ |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **1.75 J** |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | **15.6 J** |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | - | - | **0.661 J** | **0.697 J** | **0.964 J** | - | **1.08 J** | - | **1.68 J** | - | **1.77 J** |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | - | - | **62.9** | **57.1** | **92.9** | - | **21.1** | - | **44.3** | - | **34.3** |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | - | - | 1 U | 1 U | 1 U | - | 1 U | - | 1 U | - | 1 U |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | - | - | **16.2 J** | **14.6 J** | **16.9 J** | - | **7.48 J** | - | **9.01 J** | - | **11.6 J** |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | - | - | **48.4** | **44.7** | **47.8** | - | **32.9** | - | **45.3** | - | **46.5** |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | - | - | **3.82** | **3.55** | **4.35** | - | **3** | - | **9.59** | - | **50.3** |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | 0.1 U | - | 0.1 U |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | - | - | **14.3** | **12.6** | **16.2** | - | **7.42** | - | **8.81** | - | **12** |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | - | - | 1 UJ | 1 UJ | 1 UJ | - | 1 UJ | - | 1 UJ | - | 1 UJ |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | - | - | 1 U | 1 U | 1 U | - | 1 U | - | 1 U | - | 1 U |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | - | - | **33.2** | **31.3** | **37.6** | - | **37.2** | - | **47.1** | - | **111** [A] |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-42<br>TP-42-S2-5<br>05/04/2022<br>205113-116<br>4 - 5 (ft)<br>737.6 to 736.6<br>Saturated | TP-42<br>TP-42-S3-10<br>05/04/2022<br>205113-117<br>8 - 10 (ft)<br>733.6 to 731.6<br>Saturated | TP-43<br>TP-43-S2-7.5<br>05/03/2022<br>205113-54<br>5 - 7.5 (ft)<br>745.4 to 742.9<br>Saturated | TP-43<br>TP-43-S2-7.5B<br>05/03/2022<br>205113-55<br>5 - 7.5 (ft)<br>745.4 to 742.9<br>Saturated | TP-43<br>TP-43-S3-10<br>05/03/2022<br>205113-56<br>7.5 - 10 (ft)<br>742.9 to 740.4<br>Saturated | TP-43<br>TP-43-S3-1000<br>05/03/2022<br>205113-57<br>7.5 - 10 (ft)<br>742.9 to 740.4<br>Saturated | TP-43<br>TP-43-S4-14<br>05/03/2022<br>205113-58<br>12 - 14 (ft)<br>738.4 to 736.4<br>Saturated | TP-44<br>TP-44-S1-5<br>05/03/2022<br>205113-59<br>2.5 - 5 (ft)<br>747.4 to 744.9<br>Saturated | TP-44<br>TP-44-S2-10<br>05/03/2022<br>205113-60<br>7.5 - 10 (ft)<br>742.4 to 739.9<br>Saturated | TP-44<br>TP-44-S3-15<br>05/03/2022<br>205113-61<br>12.5 - 15 (ft)<br>737.4 to 734.9<br>Saturated | TP-45<br>TP-45-S1-5<br>05/04/2022<br>205113-118<br>5 - 6 (ft)<br>746.1 to 745.1<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | - | - | - | - | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | 0.004 U | - |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | - | - | - | - | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | 0.004 U | - |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | - | - | - | - | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | - | - | - | - | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | **4.9** [A] | 0.1 U | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | - | - | - | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | - |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | - | - | - | - | 0.01 U | 0.01 U | 0.01 U | - | 0.01 U | 0.01 U | - |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | - | - | - | - | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | 0.004 U | - |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | **0.42** [A] | 0.1 U | - |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | - | - | - | - | 2 U | 2 U | 2 U | - | 2 U | 2 U | - |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | - | - | - | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | - |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | **0.1** | - | **1.4** [A] | 0.1 U | - |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | - | - | - | - | 2 U | 2 U | 2 U | - | 2 U | 2 U | - |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | - | - | - | - | 10 U | 10 U | 10 U | - | 10 U | 10 U | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | - | - | - | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | - |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Chloroethane | NA | NA | NA | NA | NA | NA | - | - | - | - | 0.2 U | 0.2 U | 0.2 U | - | 0.2 U | 0.2 U | - |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | - | - | - | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | - |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | **0.18** [A] | 0.1 U | - |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | - | - | - | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | 0.002 U | 0.002 U | **0.0042** | - | **0.015** [A] | 0.002 U | - |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | - | - | - | - | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | - | - | - | - | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | - |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | **0.7** | 0.1 U | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | **0.0066** | 0.004 U | **0.0065** | - | **0.012** | 0.004 U | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | - | - | - | - | 0.4 U | 0.4 U | 0.4 U | - | 0.4 U | 0.4 U | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.01 U | **0.011** | 0.01 U | - | 0.01 U | 0.01 U | - |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | **1.2** [A] | 0.1 U | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | **0.002** | 0.002 U | **0.014** | - | **0.24** | 0.002 U | - |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | 0.004 U | - |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | - | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U | - |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | - | - | - | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | - |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | - | - | - | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | **0.0086** | 0.004 U | **0.0205** | - | **0.252** [A] | 0.004 U | - |
| | | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | - | 0.002 U | - | 0.2 U | **0.019** [A] | 0.002 U | 0.2 U | - | **0.2** [A] | 0.002 U | 0.002 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | - | 0.002 U | - | **0.27** [A] | **0.048** | **0.0035** | 0.2 U | - | **0.26** [A] | 0.002 U | 0.002 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | - | 0.002 U | - | 0.2 U | 0.01 U | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.2 U | 0.01 U | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | - | 0.002 U | - | 0.2 U | 0.01 U | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.2 U | **0.014** [A] | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | - | 0.002 U | - | 0.2 U | 0.01 U | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.2 U | 0.01 U | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-42<br>TP-42-S2-5<br>05/04/2022<br>205113-116<br>4 - 5 (ft)<br>737.6 to 736.6<br>Saturated | TP-42<br>TP-42-S3-10<br>05/04/2022<br>205113-117<br>8 - 10 (ft)<br>733.6 to 731.6<br>Saturated | TP-43<br>TP-43-S2-7.5<br>05/03/2022<br>205113-54<br>5 - 7.5 (ft)<br>745.4 to 742.9<br>Saturated | TP-43<br>TP-43-S2-7.5B<br>05/03/2022<br>205113-55<br>5 - 7.5 (ft)<br>745.4 to 742.9<br>Saturated | TP-43<br>TP-43-S3-10<br>05/03/2022<br>205113-56<br>7.5 - 10 (ft)<br>742.9 to 740.4<br>Saturated | TP-43<br>TP-43-S3-1000<br>05/03/2022<br>205113-57<br>7.5 - 10 (ft)<br>742.9 to 740.4<br>Saturated | TP-43<br>TP-43-S4-14<br>05/03/2022<br>205113-58<br>12 - 14 (ft)<br>738.4 to 736.4<br>Saturated | TP-44<br>TP-44-S1-5<br>05/03/2022<br>205113-59<br>2.5 - 5 (ft)<br>747.4 to 744.9<br>Saturated | TP-44<br>TP-44-S2-10<br>05/03/2022<br>205113-60<br>7.5 - 10 (ft)<br>742.4 to 739.9<br>Saturated | TP-44<br>TP-44-S3-15<br>05/03/2022<br>205113-61<br>12.5 - 15 (ft)<br>737.4 to 734.9<br>Saturated | TP-45<br>TP-45-S1-5<br>05/04/2022<br>205113-118<br>5 - 6 (ft)<br>746.1 to 745.1<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.2 U | **0.014** | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | - | 0.002 U | - | 0.2 U | 0.01 U | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | - | 0.002 U | - | 0.2 U | **0.026** [A] | 0.002 U | 0.2 U | - | **0.022** [A] | 0.002 U | 0.002 U |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | - | 0.002 U | - | 0.2 U | 0.01 U | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | - | 0.002 U | - | 0.2 U | 0.01 U | 0.002 U | 0.2 U | - | **0.026** [A] | 0.002 U | 0.002 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | - | 0.002 U | - | 0.2 U | 0.01 U | 0.002 U | 0.2 U | - | **0.088** [A] | 0.002 U | 0.002 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.2 U | 0.01 U | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | 0.002 U | - | **0.27** | **0.048** | **0.0035** | 0.2 U | - | **0.46** [A] | 0.002 U | 0.002 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | 0.002 U | - | 0.2 U | **0.01** | 0.002 U | 0.2 U | - | 0.02 U | 0.002 U | 0.002 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.2 U | **0.028** | **0.0028** | 0.2 U | - | **0.24 J-** | 0.002 U | 0.002 U |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | - | 0.002 U | - | 0.2 U | **0.027** [A] | **0.0021** [A] | **0.26** [A] | - | **0.059** [A] | 0.002 U | 0.002 U |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | - | 0.00151 U | - | 0.151 U | **0.009** [A] | 0.00151 U | 0.151 U | - | **0.015** [A] | 0.00151 U | 0.00151 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | **11** | **26** | 5 U | 5 U | - | - | **330** | **860** | **1100** | 5 U | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | **5100** | 50 U | 50 UJ | **340 J** | **120 J** | 50 UJ | **1100** | **970** | **1500** | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | **7900** | 250 U | 250 UJ | **1100 J** | **1100 J** | 250 UJ | **4900** | **9000** | **11000** | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | **13000** | 250 U | 250 UJ | **1440 J** | **1220 J** | 250 UJ | **6000** | **9970** | **12500** | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | **13011** [A] | **26** | 250 UJ | **1440 J** [A] | **1220 J** [A] | 250 UJ | **6330** [A] | **10830** [A] | **13600** [A] | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | 24.7 U | - | 28.8 U | - | - | - | **66.6** | **250** | **308** | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | **59.5** | - | 14.4 U | - | - | - | **156 J+** | **103 J+** | **129 J+** | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | **356** | - | 14.4 U | - | - | - | **120** | **76.8** | **74.5** | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | **383** | - | 14.4 U | - | - | - | **90.8** | **166** | **127** | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | **804** | - | 14.4 U | - | - | - | **1540** | **3820** | **3090** | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | 24.7 U | - | 28.8 U | - | - | - | 26.1 U | 23.2 U | 22.9 U | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | **16.8** | - | 14.4 U | - | - | - | **13.3** | **12.6** | **22.8** | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | **195** | - | 14.4 U | - | - | - | **63.2** | **36.7** | **45** | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | **1290** | - | 14.4 U | - | - | - | 13 U | **127** | **24.6** | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | **2410** | - | 14.4 U | - | - | - | **240** | **534** | **472** | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | 2.93 UJ | - | 2.64 U | - | - | - | 1.54 U | 1.68 U | 2.36 U | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | 1.76 UJ | - | 1.58 U | - | - | - | 0.923 U | 1.01 U | **6.17** | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | 2.93 UJ | - | 2.64 U | - | - | - | 1.54 U | **6** | **20.4** | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | **22.5 J** | - | **1.02** | - | - | - | **3.21** | **13.2** | **27.8** | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | **8.99 J** | - | 3.17 U | - | - | - | **3.67** | **20.8** | **49.9** | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | **89.5 J** | - | **7.26** | - | - | - | **20.2** | **58.7** | **169** | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | **827 J** | - | **67.4 J** | - | - | - | **40.9 J** | **76.8 J** | **189 J** | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | - | - | - | **3.2 J** | **2.44 J** | **1.38 J** | **1.13 J** | - | **1.89 J** | - | **1.92 J** |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | - | - | - | **50.1** | **48.5** | **35.5** | **35.7** | - | **32.4** | - | **55.5** |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | - | - | - | **1.35** [A] | 1 U | 1 U | 1 U | - | 1 U | - | 1 U |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | - | - | - | **14.6 J** | **10.6 J** | **8.95 J** | **10.5 J** | - | **12 J** | - | **15.5 J** |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | - | - | - | **74.6** [A] | **50.6** | **45** | **38.3** | - | **34.3** | - | **53.5** [A] |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | - | - | - | **83.4** [A] | **42.3 J** [A] | **5.71 J** | **15.5** | - | **8.51** | - | **3.95** |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - | 0.1 U |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | - | - | - | **15.4** | **14.4** | **14.2** | **9.59** | - | **9.87** | - | **15.5** |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | - | - | - | 1 UJ | 1 UJ | 1 UJ | 1 UJ | - | 1 UJ | - | 1 UJ |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | - | - | - | 1 U | 1 U | 1 U | 1 U | - | 1 U | - | 1 U |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | - | - | - | **1120 J** [AE] | **597 J** [AE] | **62.9 J** | **85.3** | - | **41.2** | - | **47.6** |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-45<br>TP-45-S3-10<br>05/04/2022<br>205113-120<br>8 - 10 (ft)<br>743.1 to 741.1<br>Saturated | TP-46<br>TP-46-S1-5<br>05/02/2022<br>205113-62<br>2.5 - 5 (ft)<br>751 to 748.5<br>Saturated | TP-46<br>TP-46-S2-10<br>05/02/2022<br>205113-63<br>7.5 - 10 (ft)<br>746 to 743.5<br>Saturated | TP-47<br>TP-47-S1-5<br>05/03/2022<br>205113-64<br>2.5 - 5 (ft)<br>749.3 to 746.8<br>Saturated | TP-47<br>TP-47-S2-10<br>05/03/2022<br>205113-65<br>7.5 - 10 (ft)<br>744.3 to 741.8<br>Saturated | TP-48<br>TP-48-S1-5<br>05/03/2022<br>205113-67<br>2.5 - 5 (ft)<br>752.5 to 750<br>Saturated | TP-48<br>TP-48-S1-5B<br>05/03/2022<br>205113-68<br>2.5 - 5 (ft)<br>752.5 to 750<br>Saturated | TP-48<br>TP-48-S2-10<br>05/03/2022<br>205113-69<br>7.5 - 10 (ft)<br>747.5 to 745<br>Saturated | TP-48<br>TP-48-S2-10B<br>05/03/2022<br>205113-127<br>7.5 - 10 (ft)<br>747.5 to 745<br>Saturated | TP-48<br>TP-48-S3-15<br>05/03/2022<br>205113-70<br>12.5 - 15 (ft)<br>742.5 to 740<br>Saturated | TP-49<br>TP-49-S1-2.5<br>05/03/2022<br>205113-71<br>2 - 2.5 (ft)<br>755.4 to 754.9<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | - | - | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | - | 0.004 U | 0.004 U |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | - | - | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | - | 0.004 U | 0.004 U |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | - | - | - | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | - | 0.5 U | 0.5 U |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | - | - | - | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | - | 0.5 U | 0.5 U |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | **1.6** [B] |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - | 1 U | 1 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | - | - | - | 0.01 U | 0.01 U | 0.01 U | 0.01 U | - | - | 0.01 U | 0.01 U |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | - | - | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | - | 0.004 U | 0.004 U |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | **0.41** |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | - | - | - | 2 U | 2 U | 2 U | 2 U | - | - | 2 U | 2 U |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - | 1 U | 1 U |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | **0.36** | 0.1 U | - | - | 0.1 U | 0.1 U |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | - | - | - | 2 U | 2 U | 2 U | 2 U | - | - | 2 U | 2 U |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | - | - | - | 10 U | 10 U | 10 U | 10 U | - | - | 10 U | 10 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | **0.0031** [A] | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | **0.13** [B] |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - | 1 U | 1 U |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Chloroethane | NA | NA | NA | NA | NA | NA | - | - | - | 0.2 U | 0.2 U | 0.2 U | 0.2 U | - | - | 0.2 U | 0.2 U |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - | 1 U | 1 U |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | **0.17** |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - | 1 U | 1 U |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | **0.0025** | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | **0.27** [B] |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | - | - | - | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | - | 0.5 U | 0.5 U |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | - | - | - | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | - | 0.5 U | 0.5 U |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | **0.006** | 0.004 U | 0.004 U | 0.004 U | - | - | 0.004 U | **0.6** |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | - | - | - | **1.1 J LC** [A] | 0.4 U | **0.5 J LC** [A] | **0.52 J LC** [B] | - | - | 0.4 U | **0.54 J LC** [B] |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | - | 0.01 U | 0.01 U | 0.01 U | 0.01 U | - | - | 0.01 U | **0.68** |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | **0.13** |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | **0.0023** | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | **0.37** |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | - | - | - | **0.0052** | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | - | - | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | - | 0.004 U | 0.004 U |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | **0.007** [B] |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | - | - | - | 1 U | 1 U | 1 U | 1 U | - | - | 1 U | 1 U |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | - | - | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | **0.0083** | 0.004 U | 0.004 U | 0.004 U | - | - | 0.004 U | **0.97** [B] |
| | | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-45<br>TP-45-S3-10<br>05/04/2022<br>205113-120<br>8 - 10 (ft)<br>743.1 to 741.1<br>Saturated | TP-46<br>TP-46-S1-5<br>05/02/2022<br>205113-62<br>2.5 - 5 (ft)<br>751 to 748.5<br>Saturated | TP-46<br>TP-46-S2-10<br>05/02/2022<br>205113-63<br>7.5 - 10 (ft)<br>746 to 743.5<br>Saturated | TP-47<br>TP-47-S1-5<br>05/03/2022<br>205113-64<br>2.5 - 5 (ft)<br>749.3 to 746.8<br>Saturated | TP-47<br>TP-47-S2-10<br>05/03/2022<br>205113-65<br>7.5 - 10 (ft)<br>744.3 to 741.8<br>Saturated | TP-48<br>TP-48-S1-5<br>05/03/2022<br>205113-67<br>2.5 - 5 (ft)<br>752.5 to 750<br>Saturated | TP-48<br>TP-48-S1-5B<br>05/03/2022<br>205113-68<br>2.5 - 5 (ft)<br>752.5 to 750<br>Saturated | TP-48<br>TP-48-S2-10<br>05/03/2022<br>205113-69<br>7.5 - 10 (ft)<br>747.5 to 745<br>Saturated | TP-48<br>TP-48-S2-10B<br>05/03/2022<br>205113-127<br>7.5 - 10 (ft)<br>747.5 to 745<br>Saturated | TP-48<br>TP-48-S3-15<br>05/03/2022<br>205113-70<br>12.5 - 15 (ft)<br>742.5 to 740<br>Saturated | TP-49<br>TP-49-S1-2.5<br>05/03/2022<br>205113-71<br>2 - 2.5 (ft)<br>755.4 to 754.9<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Phenanthrene | NA | NA | NA | NA | NA | NA | - | 0.002 U | - | 0.002 U | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | - | 0.002 U | - | **0.002** | 0.002 U | 0.01 U | 0.002 U | - | - | 0.002 U | - |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | - | 0.00151 U | - | 0.00151 U | 0.00151 U | 0.00755 U | 0.00151 U | - | - | 0.00151 U | - |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | - | 5 U | - | 5 U | 5 U | **2600** | 5 U | - | **26** | 5 U | **93** |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | 50 U | 50 U | **310** | 50 U | **370 J** | 50 UJ | 50 U | **3400** |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | **640 J** | 250 UJ | 250 U | **880** |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | **310** | 250 U | **1010 J** | 250 UJ | 250 U | **4280** |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | **2910** [A] | 250 U | **1010 J** [A] | **26 J** | 250 U | **4373** [B] |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 31.4 U | - | **790** | - | **285** | - | - | 23.9 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 15.7 U | - | **584 J+** | - | **164 J+** | - | - | **93.9 J** |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 15.7 U | - | 13.5 U | - | 13.1 U | - | - | **63.2 J** |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 15.7 U | - | 13.5 U | - | 13.1 U | - | - | 11.9 U |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 15.7 U | - | **86.1** | - | **118** | - | - | **27.8 J** |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 31.4 U | - | 27.1 U | - | 26.1 U | - | - | 23.9 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 15.7 U | - | **18.1** | - | 13.1 U | - | - | 11.9 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 15.7 U | - | 13.5 U | - | 13.1 U | - | - | **17** |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 15.7 U | - | 13.5 U | - | 13.1 U | - | - | 11.9 U |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 15.7 U | - | 13.5 U | - | 13.1 U | - | - | 11.9 U |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 2.7 U | - | 3.21 U | - | 2.7 U | - | - | 3.03 U |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 1.62 U | - | 1.93 U | - | 1.62 U | - | - | 1.82 U |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 2.7 U | - | **126 J+** | - | **118 J+** | - | - | 3.03 U |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 0.539 U | - | **286 J+** | - | **182 J+** | - | - | **5.06** |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 3.24 U | - | **212 J+** | - | **171 J+** | - | - | **6.89** |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **5.9** | - | **815 J+** | - | **454 J+** | - | - | **41.6** |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **48.4 J** | - | **31.4 J+** | - | **43 J+** | - | - | **15.4 J** |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | - | **0.557 J** | - | **11.1 J** [BF] | **2.38 J** | **2.68 J** | **1.39 J** | - | - | **1.11 J** | - |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | - | **58** | - | **61.2** | **25.6** | **70.4** | **53.6** | - | - | **27.6** | - |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | - | 1 U | - | 1 U | 1 U | 1 U | 1 U | - | - | 1 U | - |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | - | **18.3 J** | - | **17.8 J** | **7.19 J** | **23.5 J** | **17.5 J** | - | - | **9.33 J** | - |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | - | **52.8** [A] | - | **76** [A] | **30.5** | **85.1** [A] | **56.7** [B] | - | - | **34.6** | - |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | - | **3.94** | - | **6.83** | **3.38** | **4.49** | **3.87** | - | - | **3.57** | - |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | - | 0.1 U | - |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | - | **14.9** | - | **19.4** | **7.56** | **22.7** | **16.9** | - | - | **7.73** | - |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | - | 1 UJ | - | 1 UJ | 1 UJ | 1 UJ | 1 UJ | - | - | 1 UJ | - |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | - | 1 U | - | 1 U | 1 U | 1 U | 1 U | - | - | 1 U | - |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | - | **42.8** | - | **53.5** | **36.7** | **57.7** | **48.4 J** | - | - | **40.7** | - |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-49<br>TP-49-S2-5<br>05/03/2022<br>205113-72<br>4 - 5 (ft)<br>753.4 to 752.4<br>Vadose | TP-49<br>TP-49-S3-7.5<br>05/03/2022<br>205113-73<br>7 - 7.5 (ft)<br>750.4 to 749.9<br>Saturated | TP-49<br>TP-49-S4-10<br>05/03/2022<br>205113-74<br>9 - 10 (ft)<br>748.4 to 747.4<br>Saturated | TP-49<br>TP-49-S5-18<br>05/03/2022<br>205113-75<br>17 - 18 (ft)<br>740.4 to 739.4<br>Saturated | TP-50<br>TP-50-S1-5<br>05/04/2022<br>205113-126<br>2.5 - 5 (ft)<br>735.5 to 733<br>Saturated | TP-50<br>TP-50-S2-10<br>05/04/2022<br>205113-131<br>7.5 - 10 (ft)<br>730.5 to 728<br>Saturated | TP-51<br>TP-51-S1-5<br>05/04/2022<br>205113-121<br>2.5 - 5 (ft)<br>749.9 to 747.4<br>Saturated | TP-51<br>TP-51-S100-5<br>05/04/2022<br>205113-123<br>2.5 - 5 (ft)<br>749.9 to 747.4<br>Saturated | TP-51<br>TP-51-S2-10<br>05/04/2022<br>205113-122<br>7.5 - 10 (ft)<br>744.9 to 742.4<br>Saturated | TP-51<br>TP-51-S3-15<br>05/04/2022<br>205113-115<br>12.5 - 15 (ft)<br>739.9 to 737.4<br>Saturated | TP-52<br>TP-52-S1-5<br>05/04/2022<br>205113-124<br>2.5 - 5 (ft)<br>726.2 to 723.7<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.004 R | 0.004 R | 0.004 U | 0.004 U | - | - | 0.004 U | 0.004 U | 0.004 U | - | - |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.004 R | 0.004 R | 0.004 U | 0.004 U | - | - | 0.004 U | 0.004 U | 0.004 U | - | - |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.002 R | 0.002 R | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U | 0.002 U | - | - |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.5 R | 0.5 R | 0.5 U | 0.5 U | - | - | 0.5 U | 0.5 U | 0.5 U | - | - |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.5 R | 0.5 R | 0.5 U | 0.5 U | - | - | 0.5 U | 0.5 U | 0.5 U | - | - |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.1 R | **0.2 J** [A] | **5.8** [A] | **0.49** [A] | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 1 R | 1 R | 1 U | 1 U | - | - | 1 U | 1 U | 1 U | - | - |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.01 R | 0.01 R | 0.01 U | 0.01 U | - | - | 0.01 U | 0.01 U | 0.01 U | - | - |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.004 R | 0.004 R | 0.004 U | 0.004 U | - | - | 0.004 U | 0.004 U | 0.004 U | - | - |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.1 R | **0.25 J** [A] | **3.4** [A] | **0.19** [A] | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 2 R | 2 R | 2 U | 2 U | - | - | 2 U | 2 U | 2 U | - | - |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 1 R | 1 R | 1 U | 1 U | - | - | 1 U | 1 U | 1 U | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | **0.2 J** | **0.68 J** | **0.81** | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 2 R | 2 R | 2 U | 2 U | - | - | 2 U | 2 U | 2 U | - | - |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 10 R | 10 R | 10 U | 10 U | - | - | 10 U | 10 U | 10 U | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | **0.016 J** [B] | 0.002 R | **0.037** [A] | **0.0066** [A] | - | - | 0.002 U | 0.002 U | 0.002 U | - | - |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 1 R | 1 R | 1 U | 1 U | - | - | 1 U | 1 U | 1 U | - | - |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.2 R | 0.2 R | 0.2 U | 0.2 U | - | - | 0.2 U | 0.2 U | 0.2 U | - | - |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 1 R | 1 R | 1 U | 1 U | - | - | 1 U | 1 U | 1 U | - | - |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.002 R | 0.002 R | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U | 0.002 U | - | - |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | **0.44 J** | **1.5 J** [A] | **1.3** [A] | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | 1 R | 1 R | 1 U | 1 U | - | - | 1 U | 1 U | 1 U | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | **1.2 J** [B] | **3.1 J** [A] | **0.6** [A] | **0.1** [A] | - | - | 0.002 U | 0.002 U | 0.002 U | - | - |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.5 R | 0.5 R | 0.5 U | 0.5 U | - | - | 0.5 U | 0.5 U | 0.5 U | - | - |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | 0.5 R | **0.66 J** | **6.4** [A] | 0.5 U | - | - | 0.5 U | 0.5 U | 0.5 U | - | - |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | **0.38 J** | **1.2 J** [A] | **1.7** [A] | **0.14** | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | **0.35 J** | **0.93 J** | **1.7** | **0.087** | - | - | 0.004 U | 0.004 U | 0.004 U | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.002 R | 0.002 R | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U | 0.002 U | - | - |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | **0.55 J LC** [B] | 0.4 R | 0.4 U | **1.1 J LC** [A] | - | - | 0.4 U | 0.4 U | **0.41 J LC** [A] | - | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | **0.4 J** | **0.67 J** [A] | **1.7** [A] | **0.13** | - | - | 0.01 U | 0.01 U | **0.016** | - | - |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | **0.59 J** | **1.9 J** [A] | **2.5** [A] | **0.21** | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | **0.13 J** | **0.3 J** | **0.2** | **0.046** | - | - | 0.002 U | 0.002 U | 0.002 U | - | - |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | 0.002 R | 0.002 R | **0.0036** [A] | **0.0057** [A] | - | - | 0.002 U | 0.002 U | 0.002 U | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.004 R | 0.004 R | 0.004 U | 0.004 U | - | - | 0.004 U | 0.004 U | 0.004 U | - | - |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.1 R | 0.1 R | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | 0.1 U | - | - |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.002 R | 0.002 R | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U | 0.002 U | - | - |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 1 R | 1 R | 1 U | 1 U | - | - | 1 U | 1 U | 1 U | - | - |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.002 R | 0.002 R | 0.002 U | 0.002 U | - | - | 0.002 U | 0.002 U | 0.002 U | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | **0.48** | **1.23** [A] | **1.9** [A] | **0.133** [A] | - | - | 0.004 U | 0.004 U | 0.004 U | - | - |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | **0.036** | - | **0.56** [A] | **0.13** [A] | 0.002 U | - | 0.002 U | **0.016** | - | - | 0.002 U |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | **0.05** | - | **0.52** [A] | **0.14** [A] | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | 0.002 U | - | **0.013** | **0.0048** | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-49<br>TP-49-S2-5<br>05/03/2022<br>205113-72<br>4 - 5 (ft)<br>753.4 to 752.4<br>Vadose | TP-49<br>TP-49-S3-7.5<br>05/03/2022<br>205113-73<br>7 - 7.5 (ft)<br>750.4 to 749.9<br>Saturated | TP-49<br>TP-49-S4-10<br>05/03/2022<br>205113-74<br>9 - 10 (ft)<br>748.4 to 747.4<br>Saturated | TP-49<br>TP-49-S5-18<br>05/03/2022<br>205113-75<br>17 - 18 (ft)<br>740.4 to 739.4<br>Saturated | TP-50<br>TP-50-S1-5<br>05/04/2022<br>205113-126<br>2.5 - 5 (ft)<br>735.5 to 733<br>Saturated | TP-50<br>TP-50-S2-10<br>05/04/2022<br>205113-131<br>7.5 - 10 (ft)<br>730.5 to 728<br>Saturated | TP-51<br>TP-51-S1-5<br>05/04/2022<br>205113-121<br>2.5 - 5 (ft)<br>749.9 to 747.4<br>Saturated | TP-51<br>TP-51-S100-5<br>05/04/2022<br>205113-123<br>2.5 - 5 (ft)<br>749.9 to 747.4<br>Saturated | TP-51<br>TP-51-S2-10<br>05/04/2022<br>205113-122<br>7.5 - 10 (ft)<br>744.9 to 742.4<br>Saturated | TP-51<br>TP-51-S3-15<br>05/04/2022<br>205113-115<br>12.5 - 15 (ft)<br>739.9 to 737.4<br>Saturated | TP-52<br>TP-52-S1-5<br>05/04/2022<br>205113-124<br>2.5 - 5 (ft)<br>726.2 to 723.7<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | **0.012** | 0.002 U | - | - | 0.002 U |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | **0.0033** | - | **0.02** | **0.0093** | 0.002 U | - | **0.26** | **0.2** | - | - | 0.002 U |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | **0.036** | - | **1.87** [A] | **0.39** [A] | 0.002 U | - | 0.002 U | **0.016** | - | - | 0.002 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | **0.029** | - | **0.79 J+** [A] | **0.12 J+** | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Phenanthrene | NA | NA | NA | NA | NA | NA | **0.0027** | - | **0.02** | **0.0096** | 0.002 U | - | 0.002 U | 0.002 U | - | - | 0.002 U |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | - | **0.031** [A] | **0.029** [A] | - | - | 0.002 U |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | 0.00151 U | - | 0.00151 U | 0.00151 U | 0.00151 U | - | **0.002** | 0.00151 U | - | - | 0.00151 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | **390** | **3800** | **2200** | **130** | 5 U | - | **85** | **140** | 5 U | - | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | **92** | **700** | **480** | **150** | 50 U | **62** | **2100** | **2600** | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | **92** | **700** | **480** | **150** | 250 U | **62** | **2100** | **2600** | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | **482** [B] | **4500** [A] | **2680** [A] | **280** [A] | 250 U | **62** | **2185** [A] | **2740** [A] | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | 25.8 U | 25.9 U | 25.2 U | 21.1 U | - | - | 24.5 U | 22.6 U | 20.7 U | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | **32.1** | **160** | **175** | **12.1** | - | - | **126** | **138** | **109** | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | 12.9 U | **46** | **63.6** | 10.5 U | - | - | **553** | **597** | **471** | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | 12.9 U | 12.9 U | 12.6 U | 10.5 U | - | - | **307** | **339** | **255** | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | 12.9 U | 12.9 U | 12.6 U | 10.5 U | - | - | **33** | **38.6** | **28.3** | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | 25.8 U | 25.9 U | 25.2 U | 21.1 U | - | - | 24.5 U | 22.6 U | 20.7 U | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | 12.9 U | **36.8** | **50.1** | 10.5 U | - | - | 12.3 U | 11.3 U | 10.3 U | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | 12.9 U | 12.9 U | **31.8** | 10.5 U | - | - | **137** | **178** | **134** | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | 12.9 U | 12.9 U | 12.6 U | 10.5 U | - | - | **392** | **414** | **327** | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | 12.9 U | 12.9 U | 12.6 U | 10.5 U | - | - | **48.8** | **53.8** | **20.6** | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | **6.51 J+** | **14.4 J+** | **41.3 J+** | **30.8 J+** | - | - | 2.67 UJ | 2.27 UJ | 2.35 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | **42.5 J+** | **160 J+** | **166 J+** | **109 J+** | - | - | 1.6 UJ | 1.36 UJ | 1.41 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | **35.1 J+** | **191 J+** | **156 J+** | **86.2 J+** | - | - | 2.67 UJ | 2.27 UJ | 2.35 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | **92.4 J+** | **282 J+** | **200 J+** | **93.8 J+** | - | - | **40.1 J** | **30.5 J** | 0.471 UJ | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | **76.1 J+** | **291 J+** | **241 J+** | **137 J+** | - | - | **4.49 J** | **3.2 J** | 2.82 UJ | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | **524 J+** | **1430 J+** | **1020 J+** | **506 J+** | - | - | **115 J** | **75 J** | **1.57 J** | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | **783 J+** | **1240 J+** | **955 J+** | **576 J+** | - | - | **1160 J** | **917 J** | **22.6 J** | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | - | - | **1.55 J** | **1.39 J** | - | - | **1.75 J** | **1.27 J** | - | - | **2.4 J** |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | - | - | **32.9** | **28.6** | - | - | **49.8** | **42.1** | - | - | **29.5** |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | - | - | 1 U | 1 U | - | - | 1 U | 1 U | - | - | 1 U |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | - | - | **13.8 J** | **9.87 J** | - | - | **15.6 J** | **10.7 J** | - | - | **6.18 J** |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | - | - | **42.6** | **38.5** | - | - | **55.3** [A] | **34** | - | - | **28.9** |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | - | - | **5.44** | **3.65** | - | - | **2.46** | **2.25** | - | - | **3.83** |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | 0.1 U | 0.1 U | - | - | 0.1 U | 0.1 U | - | - | 0.1 U |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | - | - | **12** | **8.67** | - | - | **17.5 J** | **11 J** | - | - | **6.15** |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | - | - | 1 UJ | 1 UJ | - | - | 1 UJ | 1 UJ | - | - | 1 UJ |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | - | - | 1 U | 1 U | - | - | 1 U | 1 U | - | - | 1 U |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | - | - | **41** | **41.6** | - | - | **55.6** | **38.4** | - | - | **32** |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-52<br>TP-52-S3-15<br>05/04/2022<br>205113-125<br>12.5 - 15 (ft)<br>716.2 to 713.7<br>Saturated | TP-53<br>TP-53-S1-5<br>05/04/2022<br>205113-129<br>2.5 - 5 (ft)<br>730 to 727.5<br>Saturated | TP-53<br>TP-53-S2-10<br>05/04/2022<br>205113-130<br>7.5 - 10 (ft)<br>725 to 722.5<br>Saturated | TP-54<br>TP-54-S1-5<br>05/02/2022<br>205113-76<br>2.5 - 5 (ft)<br>740.2 to 737.7<br>Saturated | TP-54<br>TP-54-S2-10<br>05/02/2022<br>205113-77<br>7.5 - 10 (ft)<br>735.2 to 732.7<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | - | - | - | - | 0.004 U |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | - | - | - | - | 0.004 U |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | - | - | - | - | 0.002 U |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | - | - | - | - | 0.5 U |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | - | - | - | - | 0.5 U |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | - | - | - | - | 1 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | - | - | - | - | 0.01 U |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | - | - | - | - | 0.004 U |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.1 U |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | - | - | - | - | 0.1 U |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | - | - | - | - | 0.1 U |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | - | - | - | - | 2 U |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.1 U |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | - | - | - | - | 1 U |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | 0.1 U |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.1 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | - | - | - | - | 2 U |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | - | - | - | - | 10 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | 0.002 U |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | - | - | - | - | 0.1 U |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | - | - | - | - | 0.1 U |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | - | - | - | - | 0.1 U |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | - | - | - | - | 1 U |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | - | - | - | - | 0.1 U |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.1 U |
| Chloroethane | NA | NA | NA | NA | NA | NA | - | - | - | - | 0.2 U |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | - | - | - | - | 0.1 U |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | - | - | - | - | 1 U |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | - | - | - | - | 0.002 U |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | - | 0.1 U |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | - | - | - | - | 0.1 U |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | - | - | - | - | 0.1 U |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | - | - | - | - | 0.1 U |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | - | - | - | - | 1 U |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | 0.002 U |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | - | - | - | - | 0.5 U |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | - | - | - | - | 0.5 U |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | 0.1 U |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | 0.004 U |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | 0.002 U |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | - | - | - | - | 0.4 U |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.01 U |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | 0.1 U |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | 0.002 U |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | - | - | - | - | 0.1 U |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | - | - | - | - | 0.1 U |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | - | - | - | - | 0.002 U |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | 0.1 U |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | - | - | - | - | 0.004 U |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | - | - | - | - | 0.1 U |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | - | - | - | - | 0.002 U |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | - | - | - | - | 1 U |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | - | - | - | - | 0.002 U |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | 0.004 U |
| | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | - | - | - | - | - |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | - | - | - | - | - |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | - | - | - | - | - |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | - | - | - | - | - |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | - | - | - | - | - |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | - | - | - | - | - |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | - | - | - | - | - |

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MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-52<br>TP-52-S3-15<br>05/04/2022<br>205113-125<br>12.5 - 15 (ft)<br>716.2 to 713.7<br>Saturated | TP-53<br>TP-53-S1-5<br>05/04/2022<br>205113-129<br>2.5 - 5 (ft)<br>730 to 727.5<br>Saturated | TP-53<br>TP-53-S2-10<br>05/04/2022<br>205113-130<br>7.5 - 10 (ft)<br>725 to 722.5<br>Saturated | TP-54<br>TP-54-S1-5<br>05/02/2022<br>205113-76<br>2.5 - 5 (ft)<br>740.2 to 737.7<br>Saturated | TP-54<br>TP-54-S2-10<br>05/02/2022<br>205113-77<br>7.5 - 10 (ft)<br>735.2 to 732.7<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | - | - | - | - | - |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | - | - | - | - | - |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | - | - | - | - | - |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | - | - | - | - | - |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | - | - | - | - | - |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | - | - | - | - | - |
| Phenanthrene | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | - | - | - | - | - |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | - | - | - | - | - |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | - | 5 U | - | - | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | - | - | - | - | **1.41 J** |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | - | - | - | - | **23.9** |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | - | - | - | - | 1 U |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | - | - | - | - | **12 J** |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | - | - | - | - | **38.8** |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | - | - | - | - | **2.62** |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | 0.1 U |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | - | - | - | - | **12.3** |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | - | - | - | - | 1 UJ |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | - | - | - | - | 1 U |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | - | - | - | - | **38.9** |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - |

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MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-55<br>TP-55-S1-2.5<br>05/04/2022<br>205113-78<br>2.5 - 3.5 (ft)<br>754.6 to 753.6<br>Vadose | TP-55<br>TP-55-S2-5<br>05/04/2022<br>205113-79<br>4 - 5 (ft)<br>753.1 to 752.1<br>Vadose | TP-55<br>TP-55-S3-10<br>05/04/2022<br>205113-80<br>10 - 12.5 (ft)<br>747.1 to 744.6<br>Saturated | TP-55<br>TP-55-S4-15<br>05/04/2022<br>205113-81<br>14 - 16 (ft)<br>743.1 to 741.1<br>Saturated | TP-56<br>TP-56-S1-2.5<br>05/05/2022<br>205113-82<br>0 - 2.5 (ft)<br>757 to 754.5<br>Vadose | TP-56<br>TP-56-S2-5<br>05/05/2022<br>205113-83<br>2.5 - 5 (ft)<br>754.5 to 752<br>Vadose | TP-56<br>TP-56-S3-10<br>05/05/2022<br>205113-84<br>5 - 10 (ft)<br>752 to 747<br>Saturated | TP-56<br>TP-56-S4-15<br>05/05/2022<br>205113-85<br>10 - 15 (ft)<br>747 to 742<br>Saturated | TP-57<br>TP-57-S1-5<br>05/05/2022<br>205113-86<br>2.5 - 5 (ft)<br>750.8 to 748.3<br>Saturated | TP-57<br>TP-57-S2-10<br>05/05/2022<br>205113-87<br>7.5 - 10 (ft)<br>745.8 to 743.3<br>Saturated | TP-58<br>TP-58-S1-2.5<br>05/05/2022<br>205113-88<br>0 - 2.5 (ft)<br>756.1 to 753.6<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.004 U | - | - | 0.004 U | - | - | - | 0.004 U | 0.004 U | - | - |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.004 U | - | - | 0.004 U | - | - | - | 0.004 U | 0.004 U | - | - |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.5 U | - | - | 0.5 U | - | - | - | 0.5 U | 0.5 U | - | - |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.5 U | - | - | 0.5 U | - | - | - | 0.5 U | 0.5 U | - | - |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 1 U | - | - | 1 U | - | - | - | 1 U | 1 U | - | - |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.01 U | - | - | 0.01 U | - | - | - | 0.01 U | 0.01 U | - | - |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.004 U | - | - | 0.004 U | - | - | - | 0.004 U | 0.004 U | - | - |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.1 U | - | - | **0.13** [A] | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 2 U | - | - | 2 U | - | - | - | 2 U | 2 U | - | - |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 1 U | - | - | 1 U | - | - | - | 1 U | 1 U | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 2 U | - | - | 2 U | - | - | - | 2 U | 2 U | - | - |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 10 U | - | - | 10 U | - | - | - | 10 U | 10 U | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | **0.0022** | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 1 U | - | - | 1 U | - | - | - | 1 U | 1 U | - | - |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.2 U | - | - | 0.2 U | - | - | - | 0.2 U | 0.2 U | - | - |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 1 U | - | - | 1 U | - | - | - | 1 U | 1 U | - | - |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | 1 U | - | - | 1 U | - | - | - | 1 U | 1 U | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | **0.0068** | - | - | **0.0089** [A] | - | - | - | 0.002 U | 0.002 U | - | - |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.5 U | - | - | 0.5 U | - | - | - | 0.5 U | 0.5 U | - | - |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | 0.5 U | - | - | 0.5 U | - | - | - | 0.5 U | 0.5 U | - | - |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | **0.023** | - | - | 0.004 U | - | - | - | 0.004 U | 0.004 U | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | **0.68 J LC** [B] | - | - | 0.4 U | - | - | - | 0.4 U | **0.56 J LC** [A] | - | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | **0.02** | - | - | **0.035** | - | - | - | 0.01 U | 0.01 U | - | - |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | **0.006** | - | - | **0.0021** | - | - | - | 0.002 U | 0.002 U | - | - |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | **0.0026** | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.004 U | - | - | 0.004 U | - | - | - | 0.004 U | 0.004 U | - | - |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 1 U | - | - | 1 U | - | - | - | 1 U | 1 U | - | - |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | **0.029** | - | - | **0.0021** | - | - | - | 0.004 U | 0.004 U | - | - |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | 0.002 U | - | - | **0.025** [A] | - | - | - | 0.002 U | 0.002 U | - | - |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | 0.002 U | - | - | **0.039** | - | - | - | 0.002 U | 0.002 U | - | - |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-55<br>TP-55-S1-2.5<br>05/04/2022<br>205113-78<br>2.5 - 3.5 (ft)<br>754.6 to 753.6<br>Vadose | TP-55<br>TP-55-S2-5<br>05/04/2022<br>205113-79<br>4 - 5 (ft)<br>753.1 to 752.1<br>Vadose | TP-55<br>TP-55-S3-10<br>05/04/2022<br>205113-80<br>10 - 12.5 (ft)<br>747.1 to 744.6<br>Saturated | TP-55<br>TP-55-S4-15<br>05/04/2022<br>205113-81<br>14 - 16 (ft)<br>743.1 to 741.1<br>Saturated | TP-56<br>TP-56-S1-2.5<br>05/05/2022<br>205113-82<br>0 - 2.5 (ft)<br>757 to 754.5<br>Vadose | TP-56<br>TP-56-S2-5<br>05/05/2022<br>205113-83<br>2.5 - 5 (ft)<br>754.5 to 752<br>Vadose | TP-56<br>TP-56-S3-10<br>05/05/2022<br>205113-84<br>5 - 10 (ft)<br>752 to 747<br>Saturated | TP-56<br>TP-56-S4-15<br>05/05/2022<br>205113-85<br>10 - 15 (ft)<br>747 to 742<br>Saturated | TP-57<br>TP-57-S1-5<br>05/05/2022<br>205113-86<br>2.5 - 5 (ft)<br>750.8 to 748.3<br>Saturated | TP-57<br>TP-57-S2-10<br>05/05/2022<br>205113-87<br>7.5 - 10 (ft)<br>745.8 to 743.3<br>Saturated | TP-58<br>TP-58-S1-2.5<br>05/05/2022<br>205113-88<br>0 - 2.5 (ft)<br>756.1 to 753.6<br>Vadose |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | **0.0023** | - | - | **0.064** | - | - | - | 0.002 U | 0.002 U | - | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | **0.0023** | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Phenanthrene | NA | NA | NA | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | - | - | 0.002 U | - | - | - | 0.002 U | 0.002 U | - | - |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | 0.00151 U | - | - | 0.00151 U | - | - | - | 0.00151 U | 0.00151 U | - | - |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | **44** | 5 U | 5 U | **270** | - | - | - | 5 U | 5 U | 5 U | 5 U |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | 50 U | **82** | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | 250 U | **82** | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | **44** | 250 U | 250 U | **352** [A] | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | 23 U | 27 U | 20.5 U | 22.5 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | 11.5 U | **23.3** | **15.9** | **17.8** | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | 11.5 U | **152** | 10.3 U | 11.3 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | 11.5 U | 13.5 U | 10.3 U | 11.3 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | 11.5 U | 13.5 U | 10.3 U | 11.3 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | 23 U | 27 U | 20.5 U | 22.5 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | 11.5 U | 13.5 U | 10.3 U | 11.3 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | 11.5 U | 13.5 U | 10.3 U | 11.3 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | 11.5 U | 13.5 U | 10.3 U | 11.3 U | - | - | - | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | 11.5 U | 13.5 U | 10.3 U | 11.3 U | - | - | - | - | - | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | 2.79 UJ | 2.92 UJ | 2.07 UJ | **15 J** | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | 1.67 UJ | 1.75 UJ | 1.24 UJ | **95.2 J** | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | 2.79 UJ | 2.92 UJ | 2.07 UJ | **83.1 J** | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | **3.37 J** | 0.584 UJ | 0.414 UJ | **126 J** | - | - | - | - | - | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | **5.25 J** | 3.5 UJ | 2.48 UJ | **135 J** | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | **5.46 J** | **0.941 J** | 0.414 UJ | **232 J** | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | **2.76 J** | **3 J** | **0.617 J** | **379 J** | - | - | - | - | - | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | **1.46 J** | - | - | **1.56 J** | - | - | - | **1.04 J** | 0.5 UJ | - | - |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | **64.6** | - | - | **44.5** | - | - | - | **36.6** | **67.9** | - | - |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | 1 U | - | - | 1 U | - | - | - | 1 U | 1 U | - | - |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | **8.79 J** | - | - | **9.6 J** | - | - | - | **8.99 J** | **19.8 J** | - | - |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | **43.1** | - | - | **36.7** | - | - | - | **41.8** | **51.1** | - | - |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | **5.17** | - | - | **3.43** | - | - | - | **3.4** | **4.1** | - | - |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | 0.1 U | - | - | 0.1 U | - | - | - | 0.1 U | 0.1 U | - | - |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | **8.32** | - | - | **18** | - | - | - | **7.51** | **14.4** | - | - |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | 1 UJ | - | - | 1 UJ | - | - | - | 1 UJ | 1 UJ | - | - |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | 1 U | - | - | 1 U | - | - | - | 1 U | 1 U | - | - |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | **51.5** | - | - | **32.5** | - | - | - | **41.1** | **37.7** | - | - |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-58<br>TP-58-S2-5<br>05/05/2022<br>205113-89<br>2.5 - 5 (ft)<br>753.6 to 751.1<br>Vadose | TP-58<br>TP-58-S3-10<br>05/05/2022<br>205113-90<br>5 - 10 (ft)<br>751.1 to 746.1<br>Saturated | TP-58<br>TP-58-S4-13<br>05/05/2022<br>205113-91<br>10 - 13 (ft)<br>746.1 to 743.1<br>Saturated | TP-59<br>TP-59-S1-5<br>05/04/2022<br>205113-92<br>4.5 - 5.5 (ft)<br>752.8 to 751.8<br>Saturated | TP-59<br>TP-59-S2-10<br>05/04/2022<br>205113-93<br>9 - 11 (ft)<br>748.3 to 746.3<br>Saturated | TP-59<br>TP-59-S3-15<br>05/04/2022<br>205113-94<br>15 - 17 (ft)<br>742.3 to 740.3<br>Saturated | TP-60<br>TP-60-S1-5<br>05/05/2022<br>205113-95<br>2.5 - 5 (ft)<br>752.2 to 749.7<br>Saturated | TP-60<br>TP-60-S2-10<br>05/05/2022<br>205113-96<br>8 - 10 (ft)<br>746.7 to 744.7<br>Saturated | TP-61<br>TP-61-S1-5<br>05/05/2022<br>205113-97<br>2.5 - 5 (ft)<br>752.4 to 749.9<br>Saturated | TP-61<br>TP-61-S2-10<br>05/05/2022<br>205113-98<br>7.5 - 10 (ft)<br>747.4 to 744.9<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 6.27E-04 | 9.76E-03 | 3.85E+01 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,1,1-Trichloroethane | 8.43E-02 | 1.49E+00 | 1.60E+05 | NA | NA | NA | 0.004 U | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | - |
| 1,1,2,2-Tetrachloroethane | 3.66E-05 | 5.59E-04 | 5.00E+00 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,1,2-Trichloroethane | 1.27E-04 | 1.94E-03 | 1.75E+01 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,1-Dichloroethane | 2.61E-03 | 4.07E-02 | 1.75E+02 | NA | NA | NA | 0.004 U | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | - |
| 1,1-Dichloroethene | 2.46E-03 | 4.56E-02 | 4.00E+03 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| 1,1-Dichloropropene | NA | NA | NA | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,2,3-Trichlorobenzene | 1.07E-02 | 2.02E-01 | 6.40E+01 | NA | NA | NA | 0.5 U | - | 0.5 U | 0.5 U | 0.5 UJ | 0.5 U | 0.5 U | - | 0.5 U | - |
| 1,2,3-Trichloropropane | 1.53E-07 | 2.41E-06 | 6.30E-03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,2,4-Trichlorobenzene | 7.01E-05 | 1.34E-03 | 3.45E+01 | NA | NA | NA | 0.5 U | - | 0.5 U | 0.5 U | 0.5 UJ | 0.5 U | 0.5 U | - | 0.5 U | - |
| 1,2,4-Trimethylbenzene | 7.21E-02 | 1.32E+00 | 8.00E+02 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | 5.64E-05 | 8.85E-04 | 2.30E-01 | NA | NA | NA | 1 U | - | 1 U | 1 U | 1 UJ | 1 U | 1 U | - | 1 U | - |
| 1,2-Dibromoethane (Ethylene Dibromide) | 1.76E-05 | 2.67E-04 | 5.00E-01 | NA | NA | NA | 0.01 U | - | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | - | 0.01 U | - |
| 1,2-Dichlorobenzene | 3.99E-01 | 6.99E+00 | 7.20E+03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,2-Dichloroethane | 1.56E-03 | 2.31E-02 | 1.10E+01 | NA | NA | NA | 0.004 U | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | - |
| 1,2-Dichloropropane | 2.37E-04 | 3.59E-03 | 2.70E+01 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,3,5-Trimethylbenzene | 7.11E-02 | 1.31E+00 | 8.00E+02 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,3-Dichlorobenzene | 1.32E-03 | 2.32E-02 | NA | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,3-Dichloropropane | 7.90E-05 | 1.21E-03 | 1.60E+03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| 1,4-Dichlorobenzene | 5.40E-02 | 9.80E-01 | 1.85E+02 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| 2,2-Dichloropropane | NA | NA | NA | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| 2-Butanone (Methyl Ethyl Ketone) | 1.40E+00 | 1.96E+01 | 4.80E+04 | NA | NA | NA | 2 U | - | 2 U | 2 U | 2 U | 2 U | 2 U | - | 2 U | - |
| 2-Chlorotoluene | 1.07E-01 | 1.89E+00 | 1.60E+03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| 2-Hexanone (Methyl Butyl Ketone) | 1.21E-02 | 1.72E-01 | 4.00E+02 | NA | NA | NA | 1 U | - | 1 U | 1 U | 1 U | 1 U | 1 U | - | 1 U | - |
| 2-Phenylbutane (sec-Butylbenzene) | 1.29E+00 | 2.49E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | **0.64** | 0.1 U | 0.1 U | - | 0.1 U | - |
| 4-Chlorotoluene | 1.06E-01 | 1.86E+00 | 1.60E+03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 1.92E-01 | 2.72E+00 | 6.40E+03 | NA | NA | NA | 2 U | - | 2 U | 2 U | 2 U | 2 U | 2 U | - | 2 U | - |
| Acetone | 2.08E+00 | 2.92E+01 | 7.20E+04 | NA | NA | NA | 10 U | - | 10 U | 10 U | 10 U | 10 U | 10 U | - | 10 U | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| Bromobenzene | 3.33E-02 | 5.60E-01 | 6.40E+02 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| Bromodichloromethane | 2.32E-04 | 3.45E-03 | 1.61E+01 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| Bromoform | 1.90E-03 | 3.01E-02 | 1.27E+02 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| Bromomethane (Methyl Bromide) | 3.31E-03 | 5.09E-02 | 1.12E+02 | NA | NA | NA | 1 U | - | 1 U | 1 U | 1 U | 1 U | 1 U | - | 1 U | - |
| Carbon tetrachloride | 8.77E-05 | 1.64E-03 | 1.43E+01 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| Chlorobenzene | 5.11E-02 | 8.59E-01 | 1.60E+03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| Chloroethane | NA | NA | NA | NA | NA | NA | 0.2 U | - | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | - | 0.2 U | - |
| Chloroform (Trichloromethane) | 4.79E-03 | 7.37E-02 | 3.23E+01 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| Chloromethane (Methyl Chloride) | NA | NA | NA | NA | NA | NA | 1 U | - | 1 U | 1 U | 1 U | 1 U | 1 U | - | 1 U | - |
| cis-1,2-Dichloroethene | 5.22E-03 | 7.95E-02 | 1.60E+02 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| cis-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| Cymene (p-Isopropyltoluene) | 4.50E-02 | 8.56E-01 | 3.20E+02 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| Dibromochloromethane | 1.91E-04 | 2.80E-03 | 1.19E+01 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| Dibromomethane | 2.47E-02 | 3.57E-01 | 8.00E+02 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| Dichlorodifluoromethane (CFC-12) | 5.29E-01 | 3.78E+01 | 1.60E+04 | NA | NA | NA | 1 U | - | 1 U | 1 U | 1 U | 1 U | 1 U | - | 1 U | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | **0.0027** | - | 0.002 U | 0.002 U | **0.015 J-** [A] | 0.002 U | 0.002 U | - | 0.002 U | - |
| Hexachlorobutadiene | 1.13E-05 | 2.12E-04 | 1.28E+01 | NA | NA | NA | 0.5 U | - | 0.5 U | 0.5 U | 0.5 UJ | 0.5 U | 0.5 U | - | 0.5 U | - |
| Hexane | 1.77E+00 | 7.18E+01 | 4.80E+03 | NA | NA | NA | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | - |
| Isopropylbenzene (Cumene) | 7.88E-01 | 1.46E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | **0.0042** | - | 0.004 U | 0.004 U | 0.004 UJ | 0.004 U | 0.004 U | - | 0.004 U | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| Methylene chloride (Dichloromethane) | 1.48E-03 | 2.17E-02 | 9.40E+01 | NA | NA | NA | **2 J LC** [B] | - | 0.4 U | **0.55 J LC** [A] | 0.4 U | **0.71 J LC** [A] | **2.6 J LC** [A] | - | **0.76 J LC** [A] | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | **0.02** | - | 0.01 U | 0.01 U | 0.01 UJ | 0.01 U | 0.01 U | - | 0.01 U | - |
| n-Propylbenzene | 8.80E-01 | 1.65E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 UJ | 0.002 U | 0.002 U | - | 0.002 U | - |
| Styrene | 1.20E-01 | 2.23E+00 | 1.60E+04 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| tert-Butylbenzene | 1.03E+00 | 1.95E+01 | 8.00E+03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 UJ | 0.1 U | 0.1 U | - | 0.1 U | - |
| Tetrachloroethene | 1.32E-03 | 2.39E-02 | 4.76E+02 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| trans-1,2-Dichloroethene | 3.25E-02 | 5.17E-01 | 1.60E+03 | NA | NA | NA | 0.004 U | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | - |
| trans-1,3-Dichloropropene | 6.90E-05 | 1.03E-03 | 1.00E+01 | NA | NA | NA | 0.1 U | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | - |
| Trichloroethene | 1.14E-04 | 1.88E-03 | 1.20E+01 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| Trichlorofluoromethane (CFC-11) | 7.93E-01 | 2.28E+01 | 2.40E+04 | NA | NA | NA | 1 U | - | 1 U | 1 U | 1 U | 1 U | 1 U | - | 1 U | - |
| Vinyl chloride | 6.17E-06 | 1.18E-04 | 6.67E-01 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | **0.0042** | - | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | - | 0.004 U | - |
| | | | | | | | | | | | | | | | | |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 2.42E-03 | 4.69E-02 | 1.96E+01 | NA | NA | NA | 0.002 U | - | 0.002 U | **0.016** [A] | 0.002 U | **0.54** [A] | 0.002 U | - | 0.002 U | - |
| 2-Methylnaphthalene | 8.85E-02 | 1.72E+00 | 3.20E+02 | NA | NA | NA | 0.002 U | - | 0.002 U | **0.0094** | 0.002 U | **0.36** [A] | 0.002 U | - | 0.002 U | - |
| Acenaphthene | 1.56E-01 | 3.06E+00 | 4.80E+03 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | **0.093** | 0.002 U | - | 0.002 U | - |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| Anthracene | 2.38E+00 | 4.74E+01 | 2.40E+04 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| Benzo(a)anthracene | 5.73E-05 | 1.14E-03 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | **0.0023** [A] | 0.002 U | **0.0023** [A] | 0.002 U | - | 0.002 U | - |
| Benzo(a)pyrene | 1.55E-05 | 3.10E-04 | 1.88E-01 | NA | 12 | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | **0.0029** [A] | 0.002 U | - | 0.002 U | - |
| Benzo(b)fluoranthene | 9.59E-05 | 1.92E-03 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | **0.0033** [A] | 0.002 U | - | 0.002 U | - |

**TABLE 4**
**SUMMARY OF SOIL QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID<br>Sample Depth (bgs)<br>Sample Elevation TCL Datum<br>Saturated vs Vadose | Most Conservative Saturated Cleanup level PCUL-SLUG SL-1 and SL-5 to SL-7 [A] | Most Conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4 [B] | SL-1 Direct Contact SL-Det | SMS Lower Tier Freshwater Benthic SCO [D] | MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife [E] | Natural Background Metals [C] | TP-58<br>TP-58-S2-5<br>05/05/2022<br>205113-89<br>2.5 - 5 (ft)<br>753.6 to 751.1<br>Vadose | TP-58<br>TP-58-S3-10<br>05/05/2022<br>205113-90<br>5 - 10 (ft)<br>751.1 to 746.1<br>Saturated | TP-58<br>TP-58-S4-13<br>05/05/2022<br>205113-91<br>10 - 13 (ft)<br>746.1 to 743.1<br>Saturated | TP-59<br>TP-59-S1-5<br>05/04/2022<br>205113-92<br>4.5 - 5.5 (ft)<br>752.8 to 751.8<br>Saturated | TP-59<br>TP-59-S2-10<br>05/04/2022<br>205113-93<br>9 - 11 (ft)<br>748.3 to 746.3<br>Saturated | TP-59<br>TP-59-S3-15<br>05/04/2022<br>205113-94<br>15 - 17 (ft)<br>742.3 to 740.3<br>Saturated | TP-60<br>TP-60-S1-5<br>05/05/2022<br>205113-95<br>2.5 - 5 (ft)<br>752.2 to 749.7<br>Saturated | TP-60<br>TP-60-S2-10<br>05/05/2022<br>205113-96<br>8 - 10 (ft)<br>746.7 to 744.7<br>Saturated | TP-61<br>TP-61-S1-5<br>05/05/2022<br>205113-97<br>2.5 - 5 (ft)<br>752.4 to 749.9<br>Saturated | TP-61<br>TP-61-S2-10<br>05/05/2022<br>205113-98<br>7.5 - 10 (ft)<br>747.4 to 744.9<br>Saturated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | NA | NA | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | **0.0022** | 0.002 U | - | 0.002 U | - |
| Benzo(k)fluoranthene | 9.40E-04 | 1.88E-02 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| Chrysene | 1.80E-03 | 3.60E-02 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | **0.0035** [A] | **0.0027** [A] | **0.0032** [A] | 0.002 U | - | 0.002 U | - |
| Dibenz(a,h)anthracene | 2.86E-05 | 5.73E-04 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| Fluoranthene | 1.00E-03 | 2.01E-02 | 3.20E+03 | NA | NA | NA | 0.002 U | - | 0.002 U | **0.0033** [A] | 0.002 U | **0.003** [A] | 0.002 U | - | 0.002 U | - |
| Fluorene | 8.00E-02 | 1.58E+00 | 3.20E+03 | NA | NA | NA | 0.002 U | - | 0.002 U | **0.018** | **0.42** [A] | **0.2** [A] | 0.002 U | - | 0.002 U | - |
| Indeno(1,2,3-cd)pyrene | 3.12E-04 | 6.24E-03 | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | **0.0021** [A] | 0.002 U | - | 0.002 U | - |
| Naphthalene, Total | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | - | 0.002 U | **0.0254** | 0.002 U | **0.9** [A] | 0.002 U | - | 0.002 U | - |
| Naphthalene | 2.36E-01 | 4.45E+00 | 1.60E+03 | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | - | 0.002 U | - |
| Phenanthrene | NA | NA | NA | NA | NA | NA | 0.002 U | - | 0.002 U | 0.002 U | **0.066** | **0.11** | 0.002 U | - | 0.002 U | - |
| Pyrene | 1.00E-03 | 2.00E-02 | 2.40E+03 | NA | NA | NA | 0.002 U | - | 0.002 U | **0.0085** [A] | **0.0096** [A] | **0.0053** [A] | 0.002 U | - | 0.002 U | - |
| cPAHs-TEQ | 4.20E-03 | 8.40E-02 | 2.40E+03 | NA | NA | NA | 0.00151 U | - | 0.00151 U | **0.002** | **0.002** | **0.004** | 0.00151 U | - | 0.00151 U | - |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | |
| Gasoline Range Organics | NA | NA | NA | NA | 5000 | NA | 5 U | 5 U | 5 U | **59** | **1200** | **680** | 5 U | - | 5 U | - |
| Diesel Range Organics | NA | NA | NA | 340 | 6000 | NA | 50 U | 50 U | **68** | **730** | **2100** | **1200** | 50 U | 50 U | 50 U | 50 U |
| PHC as Lube Oil | NA | NA | NA | 3600 | NA | NA | 250 U | 250 U | 250 U | **650** | **360** | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | NA | NA | NA | NA | NA | NA | 250 U | 250 U | **68** | **1380** | **2460** | **1200** | 250 U | 250 U | 250 U | 250 U |
| Total Petroleum Hydrocarbons | 30(g)/550 | 1000(h) | NA | NA | NA | NA | 250 U | 250 U | **68** | **1439** [A] | **3660** [A] | **1880** [A] | 250 U | 250 U | 250 U | 250 U |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| **Extractable Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 30.2 U | **53.9** | 19.7 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | **27.9** | **439** | **219** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | **109** | **1090** | **453** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | **22.6** | **224** | **87.4** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | **29.4** | 12.1 U | 9.86 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 30.2 U | 24.1 U | 19.7 U | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 15.1 U | **27.5** | **19.8** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **25.5** | **271** | **125** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **31.1** | **254** | **103** | - | - | - | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | 15.1 U | 12.1 U | 9.86 U | - | - | - | - |
| **Volatile Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 3.81 UJ | 3.05 UJ | 2.02 UJ | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 2.28 UJ | **2.32 J** | **2.04 J** | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | 3.81 UJ | **30.3 J** | **15.6 J** | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | **25.3 J** | **213 J** | 0.403 UJ | - | - | - | - |
| Total Aliphatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **9.44 J** | **69.1 J** | **42.2 J** | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **52.7 J** | **411 J** | **227 J** | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | **422 J** | **1670 J** | **748 J** | - | - | - | - |
| Total Aromatic | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| Benzene | 1.53E-04 | 2.41E-03 | 1.82E+01 | 0.57 | NA | NA | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 5.89E-03 | 1.00E-01 | 8.00E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| Toluene | 2.26E-02 | 3.74E-01 | 6.40E+03 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 7.23E-03 | 1.03E-01 | 5.56E+02 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | NA | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| Xylene (Total) | 2.96E-02 | 5.08E-01 | 1.60E+04 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | |
| Arsenic | 3.13E-02 | 3.13E-02 | 3.13E-02 | 14 | NA | 8.47 | **1.22 J** | - | - | **1.78 J** | - | **1.05 J** | **1.68 J** | - | **2.05 J** | - |
| Barium | 4.13E+01 | 8.24E+02 | 1.60E+04 | NA | 102 | 254.97 | **56.8** | - | - | **110** | - | **32.1** | **73.3** | - | **87.2** | - |
| Cadmium | 2.93E-03 | 5.80E-02 | 8.00E+01 | 2.1 | 14 | 0.1 | 1 U | - | - | 1 U | - | 1 U | 1 U | - | 1 U | - |
| Chromium | 7.20E+01 | 1.44E+03 | NA | 72 | 67 | 78.5 | **15.5 J** | - | - | **23.3 J** | - | **9.92 J** | **24.5 J** | - | **26.3 J** | - |
| Chromium VI (Hexavalent) | 2.19E-02 | 4.36E-01 | 1.20E+00 | NA | NA | NA | - | - | - | - | - | - | - | - | - | - |
| Copper | 4.01E-02 | 7.99E-01 | 3.20E+03 | 400 | 217 | 52.03 | **47.1** | - | - | **87.8** [A] | - | **40.5** | **76.5** [A] | - | **77.6** [A] | - |
| Lead | 2.10E+01 | 2.50E+02 | 2.50E+02 | 360 | 118 | 10.9 | **3.44** | - | - | **5.3** | - | **4.69** | **4.69** | - | **5.08** | - |
| Mercury | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | 0.1 U | - | - | 0.1 U | - | 0.1 U | 0.1 U | - | 0.1 U | - |
| Nickel | 7.18E-01 | 1.43E+01 | 1.60E+03 | 26 | 980 | 54.2 | **14.3** | - | - | **24.5** | - | **10.6** | **23.7** | - | **22.4** | - |
| Selenium | 7.93E-03 | 1.56E-01 | 4.00E+02 | 11 | 0.3 | NA | 1 UJ | - | - | 1 UJ | - | 1 UJ | 1 UJ | - | 1 UJ | - |
| Silver | 1.46E-03 | 2.89E-02 | 4.00E+02 | NA | NA | NA | 1 U | - | - | 1 U | - | 1 U | 1 U | - | 1 U | - |
| Zinc | 1.49E+00 | 2.99E+01 | 2.40E+04 | 3200 | 360 | 85.6 | **36.2** | - | - | **78.1** | - | **41.3** | **51.2** | - | **53.6** | - |
| Mercury, Total | 6.27E-04 | 1.25E-02 | NA | 0.66 | NA | 0.13 | - | - | - | - | - | - | - | - | - | - |

***Notes:***

*For non-detects (<RL), a value of one-half the RL has been used where available in the contribution to cPAH calculations.*
*Elevation in Tacoma City Light Datum*
***Bold** values indicate a detected concentration.*
*Blue shading indicates a detected analyte concentration exceeding a Screening Level with superscript corresponding to each screening level is denoted defined below*
*A: Most conservative Saturated Cleanup level Preliminary Cleanup Levels - South Lake Union Group (PCUL-SLUG) SL-1 and SL-5 to SL-7*
*SL-1 Direct Contact SL-Det*
*SL-5 Protect Drinking Water Saturated Zone LeachFW*
*SL-6 Protect Surface Water via Ground Water Saturated Zone LeachFW*
*SL-7 Protect Sediment via Ground Water Saturated Zone LeachFW*
*B: Most conservative Vadose Cleanup level PCUL-SLUG SL-1 to SL-4*
*SL-1 Direct Contact SL-Det*
*SL-2 Protect Drinking Water Vadose Zone LeachFW*
*SL-3 Protect Surface Water via Ground Water Vadose Zone LeachFW*
*SL-4 Protect Sediment via Ground Water Vadose Zone LeachFW*
*C: Natural Background Metals*
*D: SMS Lower Tier Freshwater Benthic SCO (Sediment Cleanup Objective) was applied to samples collected within the upper 1 ft bgs.*
*E: MTCA Ecological Indicator Soil Concentrations for Protection of Wildlife.*
*F: SL-1 Direct Contact SL-Det*
*(g) 30 mg/kg if gasoline-range hydrocarbons are the primary constituent (TP-5, TP-39, TP-44, TP-48, TP-51, TP-55, and TP-59), otherwise, 550 mg/kg*
*(h) 1,000 mg/kg, the residual saturation screening level for weathered gasoline and petroleum products with an unknown composition*
*-: not analyzed or not available*
**: site specific calculated TPH value*
*bgs: below ground surface*
*cPAH-TEQ: carcinogenic Polycyclic Aromatic Hydrocarbons Toxic Equivalent Concentration*
*ft: feet*
*J: value is an estimate*
*J+: value is an estimate, biased high*
*J-: value is an estimate, biased low*
*lc: the presence of the analyte is likely due to laboratory contamination*
*mg/kg: milligrams per kilogram*
*MTCA: Model Toxic Control Act*
*NA: No Action level established*
*Natural Background Metals are Group "W" Natural Background Concentrations. Group "W" includes Whatcom, Skagit, Grays Harbor, Lewis, and Pacific Counties, Barium is the Spokane Basin*
*R: the data are unuasable*
*U: not detected, value is the laboratory reporting limit except Chromium VI (Hexavalent)*
*Chromium VI (Hexavalent) is reported as the method detection limit for samples from 11/03/2022*
*For cPAH-TEQ calculations, non-detects (<RL), a value of one-half the RL has been used where available in the contribution to cPAH calculations.*

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | B-11<br>B11-W-20221026<br>10/26/2022<br>210420-01 | B-12<br>B12-W<br>10/24/2022<br>210348-01 | B-13<br>B13-W<br>10/25/2022<br>210371-02 | B-14<br>B14-W<br>10/26/2022<br>210408-03 | B-15<br>B15-W<br>10/24/2022<br>210371-01 | B-16<br>B16-W<br>10/26/2022<br>210408-02 | B-17<br>B17-W<br>10/26/2022<br>210408-01 | MW-1D<br>MW-1D-20221103<br>11/03/2022<br>211083-01 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (µg/L)** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 1.68E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | 2.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | 1.00E-01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,1,2-Trichloroethane | 3.50E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-Dichloroethane | 7.68E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | 7.00E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloropropene | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | 6.40E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichloropropane | 3.80E-04 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | 3.60E-02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trimethylbenzene | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 1.40E-01 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 5.00E-02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | 6.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | 4.81E+00 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,2-Dichloropropane | 7.10E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-Trimethylbenzene | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | 2.00E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichloropropane | 2.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | 5.98E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2,2-Dichloropropane | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone (Methyl Ethyl Ketone) | 4.80E+03 | NA | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U |
| 2-Chlorotoluene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone (Methyl Butyl Ketone) | 4.00E+01 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Phenylbutane (sec-Butylbenzene) | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Chlorotoluene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 6.40E+02 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Acetone | 7.20E+03 | NA | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U | 50 U |
| Benzene | 4.40E-01 | NA | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U |
| Bromobenzene | 6.40E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromodichloromethane | 7.30E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Bromoform | 4.60E+00 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Bromomethane (Methyl Bromide) | 1.12E+01 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Carbon tetrachloride | 2.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Chlorobenzene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroform (Trichloromethane) | 1.41E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloromethane (Methyl Chloride) | NA | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| cis-1,2-Dichloroethene | 1.60E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | 2.20E-01 | NA | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| Cymene (p-Isopropyltoluene) | 3.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibromochloromethane | 6.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Dibromomethane | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane (CFC-12) | 1.60E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 1.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | 1.00E-02 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Hexane | 4.80E+02 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Isopropylbenzene (Cumene) | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| m,p-Xylenes | NA | NA | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Methyl Tert Butyl Ether (MTBE) | 2.43E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Methylene chloride (Dichloromethane) | 5.00E+00 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Naphthalene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 UJ | 1 U | 1 UJ | 1 UJ | 1 U |
| n-Propylbenzene | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| o-Xylene | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Styrene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 2.40E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Toluene | 5.30E+01 | NA | 1 U | 1 U | 1 U | **1.9** | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-Dichloroethene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | 2.20E-01 | NA | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| Trichloroethene | 3.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Trichlorofluoromethane (CFC-11) | 2.40E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | B-11<br>B11-W-20221026<br>10/26/2022<br>210420-01 | B-12<br>B12-W<br>10/24/2022<br>210348-01 | B-13<br>B13-W<br>10/25/2022<br>210371-02 | B-14<br>B14-W<br>10/26/2022<br>210408-03 | B-15<br>B15-W<br>10/24/2022<br>210371-01 | B-16<br>B16-W<br>10/26/2022<br>210408-02 | B-17<br>B17-W<br>10/26/2022<br>210408-01 | MW-1D<br>MW-1D-20221103<br>11/03/2022<br>211083-01 |
|---|---|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | 2.00E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Xylene (Total) | 5.70E+01 | NA | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| **Semi-Volatile Organic Compounds (µg/L)** | | | | | | | | | | |
| 1-Methylnaphthalene | 8.58E-01 | NA | 0.2 UJ | 0.2 U | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 U |
| 2-Methylnaphthalene | 3.20E+01 | NA | 0.2 UJ | 0.2 U | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 U |
| Acenaphthene | 3.00E+01 | NA | 0.02 UJ | 0.02 U | 0.02 UJ | 0.02 UJ | 0.02 UJ | 0.02 UJ | 0.02 UJ | 0.02 U |
| Acenaphthylene | NA | NA | 0.02 UJ | 0.02 U | 0.02 UJ | 0.02 UJ | 0.02 UJ | 0.02 UJ | 0.02 UJ | 0.02 U |
| Anthracene | 1.00E+02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(a)anthracene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(a)pyrene | 1.60E-05 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(b)fluoranthene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(g,h,i)perylene | NA | NA | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U |
| Benzo(k)fluoranthene | 1.60E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Chrysene | 9.83E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Dibenz(a,h)anthracene | 1.60E-05 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Fluoranthene | 2.03E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Fluorene | 1.00E+01 | NA | 0.02 UJ | 0.02 U | 0.02 UJ | 0.02 UJ | 0.02 UJ | 0.02 UJ | 0.02 UJ | 0.02 U |
| Indeno(1,2,3-cd)pyrene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Naphthalene, Total | NA | NA | 0.2 UJ | 0.2 U | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 U |
| Naphthalene | 1.60E+02 | NA | 0.2 UJ | 0.2 U | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 UJ | 0.2 U |
| Phenanthrene | NA | NA | 0.02 U | 0.031 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Pyrene | 1.47E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| cPAHs-TEQ | 4.34E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| **Semi-Volatile Organic Compounds (SIM) (µg/L)** | | | | | | | | | | |
| Acenaphthene | 3.00E+01 | NA | - | - | - | - | - | - | - | - |
| Acenaphthylene | NA | NA | - | - | - | - | - | - | - | - |
| Anthracene | 1.00E+02 | NA | - | - | - | - | - | - | - | - |
| Benzo(a)anthracene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Benzo(a)pyrene | 1.60E-05 | NA | - | - | - | - | - | - | - | - |
| Benzo(b)fluoranthene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Benzo(g,h,i)perylene | NA | NA | - | - | - | - | - | - | - | - |
| Benzo(k)fluoranthene | 1.60E-03 | NA | - | - | - | - | - | - | - | - |
| Chrysene | 9.83E-03 | NA | - | - | - | - | - | - | - | - |
| Dibenz(a,h)anthracene | 1.60E-05 | NA | - | - | - | - | - | - | - | - |
| Fluoranthene | 2.03E-02 | NA | - | - | - | - | - | - | - | - |
| Fluorene | 1.00E+01 | NA | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Naphthalene | 1.60E+02 | NA | - | - | - | - | - | - | - | - |
| Phenanthrene | NA | NA | - | - | - | - | - | - | - | - |
| Pyrene | 1.47E-02 | NA | - | - | - | - | - | - | - | - |
| **Total Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Gasoline Range Organics | 1.00E+03 | NA | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| Total Petroleum Hydrocarbons (C10-C25) DRO | NA | NA | **72** | 50 U | 50 U | **78** | 50 U | **62** | **130** | 50 U |
| Total Petroleum Hydrocarbons (C25-C36) ORO | NA | NA | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Diesel Range + Oil Range Organics | 5.00E+02 | NA | **72** | 250 U | 250 U | **78** | 250 U | **62** | **130** | 250 U |
| Total Petroleum Hydrocarbons | NA | NA | **72** | 250 U | 250 U | **78** | 250 U | **62** | **130** | 250 U |
| **Extractable Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | 41.5 R | - | - | 39.9 R | - | 39.9 R | 41.1 R | - |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | 41.5 U | - | - | 39.9 UJ | - | 39.9 U | 41.1 U | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | 41.5 R | - | - | 39.9 R | - | 39.9 R | 41.1 R | - |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | 41.5 U | - | - | 39.9 UJ | - | 39.9 U | 41.1 U | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | 41.5 R | - | - | 39.9 R | - | 39.9 R | 41.1 R | - |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | **43.4** | - | - | **45.5 J-** | - | 39.9 U | 41.1 U | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | 41.5 R | - | - | 39.9 R | - | 39.9 R | 41.1 R | - |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | 41.5 U | - | - | 39.9 UJ | - | 39.9 U | 41.1 U | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | 83 R | - | - | 79.7 R | - | 79.7 R | 82.2 R | - |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | 83 U | - | - | 79.7 UJ | - | 79.7 U | 82.2 U | - |
| **Volatile Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | - | - | - | - | - | - | - | - |
| Total Aliphatic | NA | NA | - | - | - | - | - | - | - | - |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | B-11<br>B11-W-20221026<br>10/26/2022<br>210420-01 | B-12<br>B12-W<br>10/24/2022<br>210348-01 | B-13<br>B13-W<br>10/25/2022<br>210371-02 | B-14<br>B14-W<br>10/26/2022<br>210408-03 | B-15<br>B15-W<br>10/24/2022<br>210371-01 | B-16<br>B16-W<br>10/26/2022<br>210408-02 | B-17<br>B17-W<br>10/26/2022<br>210408-01 | MW-1D<br>MW-1D-20221103<br>11/03/2022<br>211083-01 |
|---|---|---|---|---|---|---|---|---|---|---|
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | - | - | - | - | - | - | - | - |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | - | - | - | - | - | - | - | - |
| Total Aromatic | NA | NA | - | - | - | - | - | - | - | - |
| Benzene | 4.40E-01 | NA | - | - | - | - | - | - | - | - |
| Ethylbenzene | 1.20E+01 | NA | - | - | - | - | - | - | - | - |
| m,p-Xylenes | NA | NA | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether (MTBE) | 2.43E+01 | NA | - | - | - | - | - | - | - | - |
| o-Xylene | NA | NA | - | - | - | - | - | - | - | - |
| Toluene | 5.30E+01 | NA | - | - | - | - | - | - | - | - |
| Xylene (Total) | 5.70E+01 | NA | - | - | - | - | - | - | - | - |
| **Polychlorinated Biphenyls (µg/L)** | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1262 (PCB-1262) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1268 (PCB-1268) | NA | NA | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (µg/L)** | | | | | | | | | | |
| Arsenic, Dissolved | 1.27E-02 | 8 | **4.22** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Barium, Dissolved | 1.00E+03 | NA | **38.7** | 1 U | 1 U | 1 U | 1 U | 1 U | **4.67** | 1 U |
| Cadmium, Dissolved | 4.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium, Dissolved | 7.20E+01 | NA | **4.84** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Copper, Dissolved | 1.80E+00 | NA | **28.9** | 5 U | 2 U | 5 U | 2 U | 2 U | **3.25** | 5 UJ |
| Lead, Dissolved | 2.10E+00 | NA | **2.15** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Mercury, Dissolved | 1.20E-02 | NA | - | 1 U | - | 1 U | - | 1 U | 1 U | - |
| Mercury, Dissolved by 1631E | 1.20E-02 | NA | **0.024** | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Nickel, Dissolved | 1.10E+01 | NA | **5.56** | 1 U | **1.64** | **2.39** | **1.08** | **1.36** | **1.67** | 1 U |
| Selenium, Dissolved | 1.50E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver, Dissolved | 1.70E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc, Dissolved | 2.40E+01 | NA | **18.4** | 5 U | 2.5 U | 5 U | 2.5 U | 2.5 U | **3.96** | 2.5 U |
| Chromium VI (Hexavalent) | 1.14E+00 | NA | 11.2 UJ | 11.2 U | - | 11.2 U | - | 11.2 U | 11.2 U | 11.2 U |
| Arsenic, Total | 1.27E-02 | 8 | **4.73** | 1 U | **2.89** | **1.22** | 1 U | **2.78** | **3.27** | 1 U |
| Barium, Total | 1.00E+03 | NA | **43.1** | **3.66** | **36.5** | **11** | **6.87** | **18.3** | **39.4** | **1.41** |
| Cadmium, Total | 4.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium, Total | 7.20E+01 | NA | **5.65** | **1.15** | **5.75** | **22.1** | **2.89** | **3.15** | **6.15** | **1.65** |
| Copper, Total | 1.80E+00 | NA | **32.2** | 5 U | **20.9** | **8.65** | **3.82** | **14.4** | **34.5** | 5 U |
| Lead, Total | 2.10E+00 | NA | **2.41** | 1 U | **1.55** | **1.37** | 1 U | **1.18** | **2.17** | 1 U |
| Mercury, Total | 1.20E-02 | NA | 1 U | 1 U | - | 1 U | - | 1 U | 1 U | - |
| Mercury, Total by 1631E | 1.20E-02 | NA | **0.033** | 0.01 U | 0.01 UJ | 0.01 U | 0.01 UJ | **0.022** | 0.01 U | 0.01 U |
| Nickel, Total | 1.10E+01 | NA | **6.07** | **1.47** | **6.67** | **14.9** | **2.31** | **3.84** | **7.08** | **1.47** |
| Selenium, Total | 1.50E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver, Total | 1.70E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc, Total | 2.40E+01 | NA | **19.3** | 5 U | **15.3** | **9.72** | **4.75** | **8.93** | **22.1** | 5 U |
| **Other** | | | | | | | | | | |
| Total Suspended Solids (TSS) (µg/L) | NA | NA | **170000** | **6800** | 5000 U | **29000** | **22000** | **76000** | **250000** | **9600** |
| **Field Parameters** | | | | | | | | | | |
| Temperature (Deg C) | NA | NA | **11.7** | **11** | **11.9** | **12.2** | **8.5** | **11.8** | **11.1** | **11.1** |
| Dissolved Oxygen, Field (mg/L) | NA | NA | **4.87** | **4.51** | **5.19** | **4.43** | **4.68** | **4.25** | **4.45** | **4.22** |
| Conductivity, Field (mS/cm) | NA | NA | **0.112** | **0.105** | **0.106** | **0.111** | **0.105** | **0.11** | **0.108** | **0.142** |
| Oxidation Reduction Potential (ORP), Field (mv) | NA | NA | **75.5** | **73** | **111.4** | **50.1** | **8.4** | **83.9** | **67** | **81.2** |
| Turbidity, Field (NTU) | NA | NA | **250** | **46.3** | **190** | **16.3** | **41.5** | **81** | **358** | **5.1** |
| pH, Field (pH units) | NA | NA | **5.6** | **6.4** | **6.33** | **6.76** | **6.32** | **6.62** | **6.47** | **6.77** |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-1D<br>MW-1DD-20221103<br>11/03/2022<br>211083-02 | MW-1D<br>MW-1D-20230213<br>02/13/2023<br>02-171-02 | MW-1D<br>MW-1DD-20230213<br>02/13/2023<br>02-171-03 | MW-1D<br>MW-1D-20230510<br>05/10/2023<br>2305-121-01 | MW-1D<br>MW-1D-20230815<br>08/15/2023<br>2308213-001A | MW-1S<br>MW-1S-20220629<br>06/29/2022<br>06-347-01 | MW-1S<br>MW-1S-20230213<br>02/13/2023<br>02-171-01 | MW-1S<br>MW-1S-20230511<br>05/11/2023<br>2305-148-01 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (µg/L)** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 1.68E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | 2.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | 1.00E-01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,1,2-Trichloroethane | 3.50E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-Dichloroethane | 7.68E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | 7.00E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloropropene | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | 6.40E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichloropropane | 3.80E-04 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | 3.60E-02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trimethylbenzene | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 1.40E-01 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 5.00E-02 | NA | 1 U | 1 U | 1 U | 1 U | 0.01 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | 6.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | 4.81E+00 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,2-Dichloropropane | 7.10E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-Trimethylbenzene | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | 2.00E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichloropropane | 2.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | 5.98E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2,2-Dichloropropane | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 UJ |
| 2-Butanone (Methyl Ethyl Ketone) | 4.80E+03 | NA | 20 U | 20 U | 20 U | 20 US | 20 U | 20 U | 20 U | 20 UJS |
| 2-Chlorotoluene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone (Methyl Butyl Ketone) | 4.00E+01 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Phenylbutane (sec-Butylbenzene) | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Chlorotoluene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 6.40E+02 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Acetone | 7.20E+03 | NA | 50 U | 50 UJ | 50 UJ | 50 US | 50 U | 50 U | 50 UJ | 50 UJS |
| Benzene | 4.40E-01 | NA | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U |
| Bromobenzene | 6.40E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromodichloromethane | 7.30E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Bromoform | 4.60E+00 | NA | 5 U | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 US |
| Bromomethane (Methyl Bromide) | 1.12E+01 | NA | 5 U | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 US |
| Carbon tetrachloride | 2.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Chlorobenzene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroform (Trichloromethane) | 1.41E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloromethane (Methyl Chloride) | NA | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| cis-1,2-Dichloroethene | 1.60E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | 2.20E-01 | NA | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| Cymene (p-Isopropyltoluene) | 3.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibromochloromethane | 6.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Dibromomethane | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane (CFC-12) | 1.60E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 UJ |
| Ethylbenzene | 1.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | 1.00E-02 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Hexane | 4.80E+02 | NA | 5 U | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 US |
| Isopropylbenzene (Cumene) | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| m,p-Xylenes | NA | NA | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Methyl Tert Butyl Ether (MTBE) | 2.43E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Methylene chloride (Dichloromethane) | 5.00E+00 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | **8.4 LC** | 5 U | 5 U |
| Naphthalene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| o-Xylene | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Styrene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 2.40E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Toluene | 5.30E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-Dichloroethene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | 2.20E-01 | NA | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| Trichloroethene | 3.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Trichlorofluoromethane (CFC-11) | 2.40E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-1D<br>MW-1DD-20221103<br>11/03/2022<br>211083-02 | MW-1D<br>MW-1D-20230213<br>02/13/2023<br>02-171-02 | MW-1D<br>MW-1DD-20230213<br>02/13/2023<br>02-171-03 | MW-1D<br>MW-1D-20230510<br>05/10/2023<br>2305-121-01 | MW-1D<br>MW-1D-20230815<br>08/15/2023<br>2308213-001A | MW-1S<br>MW-1S-20220629<br>06/29/2022<br>06-347-01 | MW-1S<br>MW-1S-20230213<br>02/13/2023<br>02-171-01 | MW-1S<br>MW-1S-20230511<br>05/11/2023<br>2305-148-01 |
|---|---|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | 2.00E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Xylene (Total) | 5.70E+01 | NA | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| **Semi-Volatile Organic Compounds (µg/L)** | | | | | | | | | | |
| 1-Methylnaphthalene | 8.58E-01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 2-Methylnaphthalene | 3.20E+01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Acenaphthene | 3.00E+01 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Acenaphthylene | NA | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Anthracene | 1.00E+02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(a)anthracene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(a)pyrene | 1.60E-05 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(b)fluoranthene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(g,h,i)perylene | NA | NA | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U |
| Benzo(k)fluoranthene | 1.60E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Chrysene | 9.83E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Dibenz(a,h)anthracene | 1.60E-05 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Fluoranthene | 2.03E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Fluorene | 1.00E+01 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.022** | 0.02 U | 0.02 U |
| Indeno(1,2,3-cd)pyrene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Naphthalene, Total | NA | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | - | 0.2 U | 0.2 U | 0.2 U |
| Naphthalene | 1.60E+02 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Phenanthrene | NA | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.02** | 0.02 U | 0.02 U |
| Pyrene | 1.47E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| cPAHs-TEQ | 4.34E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.015 U | 0.015 U | 0.02 U | 0.02 U |
| **Semi-Volatile Organic Compounds (SIM) (µg/L)** | | | | | | | | | | |
| Acenaphthene | 3.00E+01 | NA | - | - | - | - | - | - | - | - |
| Acenaphthylene | NA | NA | - | - | - | - | - | - | - | - |
| Anthracene | 1.00E+02 | NA | - | - | - | - | - | - | - | - |
| Benzo(a)anthracene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Benzo(a)pyrene | 1.60E-05 | NA | - | - | - | - | - | - | - | - |
| Benzo(b)fluoranthene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Benzo(g,h,i)perylene | NA | NA | - | - | - | - | - | - | - | - |
| Benzo(k)fluoranthene | 1.60E-03 | NA | - | - | - | - | - | - | - | - |
| Chrysene | 9.83E-03 | NA | - | - | - | - | - | - | - | - |
| Dibenz(a,h)anthracene | 1.60E-05 | NA | - | - | - | - | - | - | - | - |
| Fluoranthene | 2.03E-02 | NA | - | - | - | - | - | - | - | - |
| Fluorene | 1.00E+01 | NA | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Naphthalene | 1.60E+02 | NA | - | - | - | - | - | - | - | - |
| Phenanthrene | NA | NA | - | - | - | - | - | - | - | - |
| Pyrene | 1.47E-02 | NA | - | - | - | - | - | - | - | - |
| **Total Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Gasoline Range Organics | 1.00E+03 | NA | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| Total Petroleum Hydrocarbons (C10-C25) DRO | NA | NA | 50 U | 50 U | 50 U | 60 US | **92** | **1500** | **840** | **350** |
| Total Petroleum Hydrocarbons (C25-C36) ORO | NA | NA | 250 U | 250 U | 250 U | 300 US | 250 U | **1700** | **800** | **1000** |
| Diesel Range + Oil Range Organics | 5.00E+02 | NA | 250 U | 250 U | 250 U | 300 US | **92** | **3200** | **1640** | **1350** |
| Total Petroleum Hydrocarbons | NA | NA | 250 U | 250 U | 250 U | 300 US | **92** | **3200** | **1640** | **1350** |
| **Extractable Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | - | 39.8 UJ | 39.6 U | 39.7 U | 39.7 UJ | 39.6 UJ | 39.8 U | 39.4 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | - | 39.8 UJ | 39.6 UJ | 39.7 U | 39.7 U | 39.6 UJ | 39.8 UJ | 39.4 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | - | 39.8 UJ | 39.6 U | 39.7 U | 39.7 UJ | 39.6 U | 39.8 U | 39.4 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | - | 39.8 UJ | 39.6 UJ | 39.7 U | 39.7 U | 39.6 U | 39.8 UJ | 39.4 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | - | 39.8 UJ | 39.6 U | 39.7 U | 39.7 UJ | 39.6 U | **19.8 J** | 39.4 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | - | **18.2 J** | 39.6 UJ | 39.7 U | 39.7 U | 39.6 U | 39.8 UJ | 39.4 U |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | - | 39.8 UJ | 39.6 U | 39.7 U | 39.7 UJ | 39.6 U | 39.8 U | **93.7** |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | - | 39.8 UJ | 39.6 UJ | 39.7 U | 39.7 U | 39.6 U | 39.8 UJ | 39.4 U |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | - | 79.7 UJ | **49.2 J** | **109** | 79.3 UJ | 79.2 U | 79.6 U | **132** |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | - | 79.7 UJ | **32.2 J** | **176** | 79.3 U | 79.2 U | 79.6 UJ | **101** |
| **Volatile Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | - | 50 U | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | - | 50 U | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | - | 50 U | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | - | 50 U | 50 U | 50 U | 40 U | 50 UJ | 50 U | 50 U |
| Total Aliphatic | NA | NA | - | - | - | 0 U | - | - | - | 0 U |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-1D<br>MW-1DD-20221103<br>11/03/2022<br>211083-02 | MW-1D<br>MW-1D-20230213<br>02/13/2023<br>02-171-02 | MW-1D<br>MW-1DD-20230213<br>02/13/2023<br>02-171-03 | MW-1D<br>MW-1D-20230510<br>05/10/2023<br>2305-121-01 | MW-1D<br>MW-1D-20230815<br>08/15/2023<br>2308213-001A | MW-1S<br>MW-1S-20220629<br>06/29/2022<br>06-347-01 | MW-1S<br>MW-1S-20230213<br>02/13/2023<br>02-171-01 | MW-1S<br>MW-1S-20230511<br>05/11/2023<br>2305-148-01 |
|---|---|---|---|---|---|---|---|---|---|---|
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | - | 50 U | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | - | 50 U | 50 U | 50 U | 40 U | 50 UJ | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | - | 50 U | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U |
| Total Aromatic | NA | NA | - | - | - | 0 U | - | - | - | 0 U |
| Benzene | 4.40E-01 | NA | - | 1 U | 1 U | 1 U | - | 10 U | 1 U | 1 U |
| Ethylbenzene | 1.20E+01 | NA | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| m,p-Xylenes | NA | NA | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| Methyl Tert Butyl Ether (MTBE) | 2.43E+01 | NA | - | 10 U | 10 U | 10 U | - | 10 U | 10 U | 10 U |
| o-Xylene | NA | NA | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| Toluene | 5.30E+01 | NA | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| Xylene (Total) | 5.70E+01 | NA | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| **Polychlorinated Biphenyls (µg/L)** | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1262 (PCB-1262) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1268 (PCB-1268) | NA | NA | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (µg/L)** | | | | | | | | | | |
| Arsenic, Dissolved | 1.27E-02 | 8 | 1 U | 1 U | 1 U | 1 US | **0.448** | 1 U | 1 U | 1 U |
| Barium, Dissolved | 1.00E+03 | NA | **1.1** | **1.05 J** | **2.34 J** | **1.5** | **3.21** | **3.44** | **2.08** | **1.87** |
| Cadmium, Dissolved | 4.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium, Dissolved | 7.20E+01 | NA | 1 U | 1 U | 1 U | **1.1** | 1 U | 1 U | 1 U | 1 U |
| Copper, Dissolved | 1.80E+00 | NA | 5 UJ | 5 U | 5 U | 5 US | 2 U | 2 U | 5 U | 5 U |
| Lead, Dissolved | 2.10E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Mercury, Dissolved | 1.20E-02 | NA | - | - | - | 1 U | - | - | - | - |
| Mercury, Dissolved by 1631E | 1.20E-02 | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Nickel, Dissolved | 1.10E+01 | NA | **1.09** | 1 U | 1 U | **2.61** | 1 U | **1.96** | **1.52** | **1.25** |
| Selenium, Dissolved | 1.50E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver, Dissolved | 1.70E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc, Dissolved | 2.40E+01 | NA | 2.5 U | 5 UJ | **11.4 J** | 5 U | **18.8** | 2.5 U | **7.05** | 5 US |
| Chromium VI (Hexavalent) | 1.14E+00 | NA | 11.2 U | 0.0127 UJ | 0.0127 UJ | - | 50 U | 11.2 UJ | 0.0127 UJ | 50 UJS |
| Arsenic, Total | 1.27E-02 | 8 | 1 U | 1 U | 1 U | 1 U | **0.763** | 1 U | - | 1 U |
| Barium, Total | 1.00E+03 | NA | **1.24** | **3.54** | **2.16** | 1 U | **6.39** | **3.58** | **2.24** | **1.91** |
| Cadmium, Total | 4.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium, Total | 7.20E+01 | NA | 1 U | **1.41** | **1.61** | **1.65** | **1.86** | 1 U | 1 U | **1.14** |
| Copper, Total | 1.80E+00 | NA | 5 U | 5 U | 5 U | 5 US | **3.36** | **5.72** | **5.53** | **14.2** |
| Lead, Total | 2.10E+00 | NA | 1 U | 1 U | 1 U | 1 U | **2.51** | 1 U | 1 U | 1 U |
| Mercury, Total | 1.20E-02 | NA | - | - | - | 1 U | - | - | - | - |
| Mercury, Total by 1631E | 1.20E-02 | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Nickel, Total | 1.10E+01 | NA | **1.27** | 1 U | 1 U | **1.96** | **1.34** | **1.73** | **1.52** | **1.27** |
| Selenium, Total | 1.50E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | - | 1 U |
| Silver, Total | 1.70E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc, Total | 2.40E+01 | NA | 5 U | 5 U | 5 U | 5 U | **14.9** | **6.05** | **6.22** | 5 US |
| **Other** | | | | | | | | | | |
| Total Suspended Solids (TSS) (µg/L) | NA | NA | 5000 U | **6000** | **5200** | 5000 U | **110000** | 5000 U | 5000 U | 5000 U |
| **Field Parameters** | | | | | | | | | | |
| Temperature (Deg C) | NA | NA | **11.1** | **10.3** | - | **10.7** | **10.3** | **20** | **7** | **12** |
| Dissolved Oxygen, Field (mg/L) | NA | NA | **4.22** | **3.85** | - | **6.65** | **4.33** | **0.97** | **1.53** | **4.51** |
| Conductivity, Field (mS/cm) | NA | NA | **0.142** | **0.144** | - | **0.1499** | **0.199** | **0.266** | **0.21** | **0.1744** |
| Oxidation Reduction Potential (ORP), Field (mv) | NA | NA | **81.2** | **65.8** | - | **97** | **157.8** | **22.5** | **41.1** | **92.3** |
| Turbidity, Field (NTU) | NA | NA | **5.1** | **-3.03** | - | **1.9** | **18.4** | **3.2** | **3.33** | **6.4** |
| pH, Field (pH units) | NA | NA | **6.77** | **6.9** | - | **6.72** | **6.71** | **6.13** | **6.17** | **6.03** |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-2D<br>MW-2D-20221103<br>11/03/2022<br>211083-03 | MW-2D<br>MW-2D-20230213<br>02/13/2023<br>02-171-05 | MW-2D<br>MW-2D-20230510<br>05/10/2023<br>2305-121-02 | MW-2D<br>MW-2D-20230815<br>08/15/2023<br>2308213-002A | MW-2S<br>MW-2S-20220629<br>06/29/2022<br>06-347-02 | MW-2S<br>MW-2S-20230213<br>02/13/2023<br>02-171-04 | MW-2S<br>MW-2S-20230511<br>05/11/2023<br>2305-148-02 | MW-2S<br>MW-2SD-20230511<br>05/11/2023<br>2305-148-03 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (µg/L)** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 1.68E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | 2.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | 1.00E-01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,1,2-Trichloroethane | 3.50E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-Dichloroethane | 7.68E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | 7.00E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloropropene | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | 6.40E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichloropropane | 3.80E-04 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | 3.60E-02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trimethylbenzene | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 1.40E-01 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 5.00E-02 | NA | 1 U | 1 U | 1 U | 0.01 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | 6.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | 4.81E+00 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,2-Dichloropropane | 7.10E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-Trimethylbenzene | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | 2.00E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichloropropane | 2.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | 5.98E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2,2-Dichloropropane | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone (Methyl Ethyl Ketone) | 4.80E+03 | NA | 20 U | 20 U | 20 US | 20 U | 20 U | 20 U | 20 US | 20 US |
| 2-Chlorotoluene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone (Methyl Butyl Ketone) | 4.00E+01 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Phenylbutane (sec-Butylbenzene) | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Chlorotoluene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 6.40E+02 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Acetone | 7.20E+03 | NA | 50 U | 50 UJ | 50 US | 50 U | 50 U | 50 UJ | 50 US | 50 US |
| Benzene | 4.40E-01 | NA | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U |
| Bromobenzene | 6.40E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromodichloromethane | 7.30E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Bromoform | 4.60E+00 | NA | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 US | 5 US |
| Bromomethane (Methyl Bromide) | 1.12E+01 | NA | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 US | 5 US |
| Carbon tetrachloride | 2.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 UJ | 0.5 UJ |
| Chlorobenzene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroform (Trichloromethane) | 1.41E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloromethane (Methyl Chloride) | NA | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| cis-1,2-Dichloroethene | 1.60E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | 2.20E-01 | NA | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| Cymene (p-Isopropyltoluene) | 3.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibromochloromethane | 6.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Dibromomethane | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane (CFC-12) | 1.60E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 1.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | 1.00E-02 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Hexane | 4.80E+02 | NA | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 US | 5 US |
| Isopropylbenzene (Cumene) | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| m,p-Xylenes | NA | NA | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Methyl Tert Butyl Ether (MTBE) | 2.43E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Methylene chloride (Dichloromethane) | 5.00E+00 | NA | 5 U | 5 U | 5 U | 5 U | **5.2 LC** | 5 U | 5 U | 5 U |
| Naphthalene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| o-Xylene | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Styrene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 2.40E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Toluene | 5.30E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-Dichloroethene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | 2.20E-01 | NA | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| Trichloroethene | 3.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Trichlorofluoromethane (CFC-11) | 2.40E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-2D<br>MW-2D-20221103<br>11/03/2022<br>211083-03 | MW-2D<br>MW-2D-20230213<br>02/13/2023<br>02-171-05 | MW-2D<br>MW-2D-20230510<br>05/10/2023<br>2305-121-02 | MW-2D<br>MW-2D-20230815<br>08/15/2023<br>2308213-002A | MW-2S<br>MW-2S-20220629<br>06/29/2022<br>06-347-02 | MW-2S<br>MW-2S-20230213<br>02/13/2023<br>02-171-04 | MW-2S<br>MW-2S-20230511<br>05/11/2023<br>2305-148-02 | MW-2S<br>MW-2SD-20230511<br>05/11/2023<br>2305-148-03 |
|---|---|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | 2.00E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Xylene (Total) | 5.70E+01 | NA | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| **Semi-Volatile Organic Compounds (µg/L)** | | | | | | | | | | |
| 1-Methylnaphthalene | 8.58E-01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 2-Methylnaphthalene | 3.20E+01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Acenaphthene | 3.00E+01 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.076** | **0.055** | 0.02 U | 0.02 U |
| Acenaphthylene | NA | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Anthracene | 1.00E+02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.033** | **0.023** | 0.02 U | 0.02 U |
| Benzo(a)anthracene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(a)pyrene | 1.60E-05 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(b)fluoranthene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(g,h,i)perylene | NA | NA | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U |
| Benzo(k)fluoranthene | 1.60E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Chrysene | 9.83E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Dibenz(a,h)anthracene | 1.60E-05 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Fluoranthene | 2.03E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Fluorene | 1.00E+01 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.087** | **0.035** | 0.02 U | 0.02 U |
| Indeno(1,2,3-cd)pyrene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Naphthalene, Total | NA | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Naphthalene | 1.60E+02 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Phenanthrene | NA | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.03** | 0.02 U | 0.02 U | 0.02 U |
| Pyrene | 1.47E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.028** | **0.067** | **0.074 J** | **0.073 J** |
| cPAHs-TEQ | 4.34E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.015 U | 0.015 U | 0.02 U | 0.02 U | 0.02 U |
| **Semi-Volatile Organic Compounds (SIM) (µg/L)** | | | | | | | | | | |
| Acenaphthene | 3.00E+01 | NA | - | - | - | - | - | - | - | - |
| Acenaphthylene | NA | NA | - | - | - | - | - | - | - | - |
| Anthracene | 1.00E+02 | NA | - | - | - | - | - | - | - | - |
| Benzo(a)anthracene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Benzo(a)pyrene | 1.60E-05 | NA | - | - | - | - | - | - | - | - |
| Benzo(b)fluoranthene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Benzo(g,h,i)perylene | NA | NA | - | - | - | - | - | - | - | - |
| Benzo(k)fluoranthene | 1.60E-03 | NA | - | - | - | - | - | - | - | - |
| Chrysene | 9.83E-03 | NA | - | - | - | - | - | - | - | - |
| Dibenz(a,h)anthracene | 1.60E-05 | NA | - | - | - | - | - | - | - | - |
| Fluoranthene | 2.03E-02 | NA | - | - | - | - | - | - | - | - |
| Fluorene | 1.00E+01 | NA | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Naphthalene | 1.60E+02 | NA | - | - | - | - | - | - | - | - |
| Phenanthrene | NA | NA | - | - | - | - | - | - | - | - |
| Pyrene | 1.47E-02 | NA | - | - | - | - | - | - | - | - |
| **Total Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Gasoline Range Organics | 1.00E+03 | NA | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| Total Petroleum Hydrocarbons (C10-C25) DRO | NA | NA | 50 U | 50 U | 60 US | **56** | **1500** | **2700** | **1400** | **1400** |
| Total Petroleum Hydrocarbons (C25-C36) ORO | NA | NA | 250 U | 250 U | 300 US | 250 U | **1100** | **1100** | **1700** | **1700** |
| Diesel Range + Oil Range Organics | 5.00E+02 | NA | 250 U | 250 U | 300 US | **56** | **2600** | **3800** | **3100** | **3100** |
| Total Petroleum Hydrocarbons | NA | NA | 250 U | 250 U | 300 US | **56** | **2600** | **3800** | **3100** | **3100** |
| **Extractable Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | - | 39.8 U | 39.6 UJ | 39.7 U | 39.6 UJ | 39.5 U | 39.5 U | 39.2 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | - | 39.8 UJ | 39.6 UJ | 39.7 U | 39.6 UJ | 39.5 UJ | 39.5 U | 39.2 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | - | 39.8 U | **82.7 J** | 39.7 U | 39.6 U | 39.5 U | 39.5 U | 39.2 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | - | 39.8 UJ | 39.6 UJ | 39.7 U | 39.6 U | **20.2 J** | 39.5 U | 39.2 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | - | 39.8 U | **77.6 J** | 39.7 U | 39.6 U | 39.5 U | 39.5 U | 39.2 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | - | 39.8 UJ | 39.6 UJ | 39.7 U | **47.8** | 39.5 UJ | 39.5 U | 39.2 U |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | - | 39.8 U | **117 J** | 39.7 U | 39.6 U | 39.5 U | **87.7 J** | 39.2 UJ |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | - | **35.8 J** | 39.6 UJ | 39.7 U | 39.6 U | 39.5 UJ | 39.5 UJ | 39.2 UJ |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | - | 79.6 U | **120 J** | 79.4 U | 79.2 U | 79 U | **103** | **120** |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | - | 79.6 UJ | **184 J** | 79.4 U | 79.2 U | 79 UJ | **147** | **87.7** |
| **Volatile Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | - | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | - | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | - | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | - | 50 U | 50 U | 40 U | 50 UJ | 50 U | 50 U | 50 U |
| Total Aliphatic | NA | NA | - | - | 0 U | - | - | - | 0 U | 0 U |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-2D<br>MW-2D-20221103<br>11/03/2022<br>211083-03 | MW-2D<br>MW-2D-20230213<br>02/13/2023<br>02-171-05 | MW-2D<br>MW-2D-20230510<br>05/10/2023<br>2305-121-02 | MW-2D<br>MW-2D-20230815<br>08/15/2023<br>2308213-002A | MW-2S<br>MW-2S-20220629<br>06/29/2022<br>06-347-02 | MW-2S<br>MW-2S-20230213<br>02/13/2023<br>02-171-04 | MW-2S<br>MW-2S-20230511<br>05/11/2023<br>2305-148-02 | MW-2S<br>MW-2SD-20230511<br>05/11/2023<br>2305-148-03 |
|---|---|---|---|---|---|---|---|---|---|---|
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | - | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | - | 50 U | 50 U | 40 U | 50 UJ | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | - | 50 U | **60** | 40 U | 50 U | 50 U | 50 U | 50 U |
| Total Aromatic | NA | NA | - | - | **60** | - | - | - | 0 U | 0 U |
| Benzene | 4.40E-01 | NA | - | 1 U | 1 U | - | 10 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 1.20E+01 | NA | - | 1 U | 1 U | - | 1 U | 1 U | 1 U | 1 U |
| m,p-Xylenes | NA | NA | - | 1 U | 1 U | - | 1 U | 1 U | 1 U | 1 U |
| Methyl Tert Butyl Ether (MTBE) | 2.43E+01 | NA | - | 10 U | 10 U | - | 10 U | 10 U | 10 U | 10 U |
| o-Xylene | NA | NA | - | 1 U | 1 U | - | 1 U | 1 U | 1 U | 1 U |
| Toluene | 5.30E+01 | NA | - | 1 U | 1 U | - | 1 U | 1 U | 1 U | 1 U |
| Xylene (Total) | 5.70E+01 | NA | - | 1 U | 1 U | - | 1 U | 1 U | 1 U | 1 U |
| **Polychlorinated Biphenyls (µg/L)** | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1262 (PCB-1262) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1268 (PCB-1268) | NA | NA | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (µg/L)** | | | | | | | | | | |
| Arsenic, Dissolved | 1.27E-02 | 8 | 1 U | 1 U | 1 US | **0.453** | **3.64** | **3.3** | 1 U | 1 U |
| Barium, Dissolved | 1.00E+03 | NA | 1 U | 1 U | **1.28** | **2.44** | **1.76** | **1.12** | **1.37** | **1.37** |
| Cadmium, Dissolved | 4.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium, Dissolved | 7.20E+01 | NA | 1 U | 1 U | **1.1** | 1 U | 1 U | 1 U | 1 U | 1 U |
| Copper, Dissolved | 1.80E+00 | NA | 5 UJ | 5 U | 5 US | 2 U | 2 U | 5 U | 5 U | 5 U |
| Lead, Dissolved | 2.10E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Mercury, Dissolved | 1.20E-02 | NA | - | - | 1 U | - | - | - | - | - |
| Mercury, Dissolved by 1631E | 1.20E-02 | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Nickel, Dissolved | 1.10E+01 | NA | 1 U | 1 U | **1.47** | 1 U | **1.65** | **1.2** | **1.39** | **1.41** |
| Selenium, Dissolved | 1.50E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver, Dissolved | 1.70E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc, Dissolved | 2.40E+01 | NA | 2.5 U | 5 U | 5 U | 2.5 U | **5.95** | 5 U | 5 US | 5 US |
| Chromium VI (Hexavalent) | 1.14E+00 | NA | 11.2 U | 0.0127 UJ | - | 50 U | 11.2 UJ | 0.0127 UJ | 50 UJS | 50 US |
| Arsenic, Total | 1.27E-02 | 8 | 1 U | 1 U | 1 U | **0.495** | **3.92** | **3.44** | **1** | 1 U |
| Barium, Total | 1.00E+03 | NA | **5.65** | **3.06** | **1.89** | **5.22** | **1.83** | 1 U | **1.53** | **1.37** |
| Cadmium, Total | 4.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium, Total | 7.20E+01 | NA | **1.64** | 1 U | **1.81** | **2.35** | 1 U | 1 U | 1 U | 1 U |
| Copper, Total | 1.80E+00 | NA | 5 U | 5 U | 5 US | 2 U | 2 U | 5 U | 5 U | 5 U |
| Lead, Total | 2.10E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Mercury, Total | 1.20E-02 | NA | - | - | 1 U | - | - | - | - | - |
| Mercury, Total by 1631E | 1.20E-02 | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Nickel, Total | 1.10E+01 | NA | **2.19** | 1 U | **1.98** | **1.47** | **1.26** | **1.06** | **1.27** | **1.18** |
| Selenium, Total | 1.50E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver, Total | 1.70E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc, Total | 2.40E+01 | NA | 5 U | 5 U | 5 U | **4** | **3.48 J** | 5 U | 5 US | 5 US |
| **Other** | | | | | | | | | | |
| Total Suspended Solids (TSS) (µg/L) | NA | NA | **23000** | **30000** | **6400** | **7000** | **14000** | **28000** | **8000** | **5200** |
| **Field Parameters** | | | | | | | | | | |
| Temperature (Deg C) | NA | NA | **11.2** | **10.1** | **11.5** | **9.3** | **19.6** | **8.2** | **14.4** | **14.4** |
| Dissolved Oxygen, Field (mg/L) | NA | NA | **4.3** | **5.34** | **7.22** | **4.94** | **0.97** | **0.93** | **3.38** | **3.38** |
| Conductivity, Field (mS/cm) | NA | NA | **0.145** | **0.162** | **0.1519** | **0.202** | **0.233** | **0.327** | **0.2935** | **0.2935** |
| Oxidation Reduction Potential (ORP), Field (mv) | NA | NA | **76.6** | **83.9** | **106.4** | **186.5** | **-90.3** | **-107.2** | **-30.6** | **-30.6** |
| Turbidity, Field (NTU) | NA | NA | **35.4** | **5.6** | **13.7** | **10.09** | **5.2** | **2.03** | **4** | **4** |
| pH, Field (pH units) | NA | NA | **6.74** | **6.77** | **6.67** | **6.71** | **6.81** | **6.8** | **6.57** | **6.57** |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-3D<br>MW-3D-20221103<br>11/03/2022<br>211083-04 | MW-3D<br>MW-3D-20230213<br>02/13/2023<br>02-171-07 | MW-3D<br>MW-3D-20230510<br>05/10/2023<br>2305-121-03 | MW-3D<br>MW-3D-20230815<br>08/15/2023<br>2308213-003A | MW-3D<br>MW-3DD-20230815<br>08/15/2023<br>2308213-005A | MW-3S<br>MW-3S-20220629<br>06/29/2022<br>06-347-03 | MW-3S<br>MW-3SD-20220629<br>06/29/2022<br>06-347-04 | MW-3S<br>MW-3S-20230213<br>02/13/2023<br>02-171-06 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (µg/L)** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 1.68E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | 2.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | 1.00E-01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,1,2-Trichloroethane | 3.50E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-Dichloroethane | 7.68E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | 7.00E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloropropene | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | 6.40E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichloropropane | 3.80E-04 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | 3.60E-02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trimethylbenzene | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 1.40E-01 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 5.00E-02 | NA | 1 U | 1 U | 1 U | 0.01 U | 0.01 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | 6.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | 4.81E+00 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,2-Dichloropropane | 7.10E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-Trimethylbenzene | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | 2.00E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichloropropane | 2.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | 5.98E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2,2-Dichloropropane | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone (Methyl Ethyl Ketone) | 4.80E+03 | NA | 20 U | 20 U | 20 US | 20 U | 20 U | 20 U | 20 U | 20 U |
| 2-Chlorotoluene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | **9.9** | **8.4** | **6.6** |
| 2-Hexanone (Methyl Butyl Ketone) | 4.00E+01 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Phenylbutane (sec-Butylbenzene) | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | **1.2** | **1.1** | **2.2** |
| 4-Chlorotoluene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | **5.1** | **4.3** | **2.7** |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 6.40E+02 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Acetone | 7.20E+03 | NA | 50 U | 50 UJ | 50 US | 50 U | 50 U | 50 U | 50 U | 50 UJ |
| Benzene | 4.40E-01 | NA | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U |
| Bromobenzene | 6.40E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromodichloromethane | 7.30E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Bromoform | 4.60E+00 | NA | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 U | 5 U |
| Bromomethane (Methyl Bromide) | 1.12E+01 | NA | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 U | 5 U |
| Carbon tetrachloride | 2.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Chlorobenzene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroform (Trichloromethane) | 1.41E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloromethane (Methyl Chloride) | NA | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| cis-1,2-Dichloroethene | 1.60E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | 2.20E-01 | NA | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| Cymene (p-Isopropyltoluene) | 3.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibromochloromethane | 6.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Dibromomethane | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane (CFC-12) | 1.60E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 1.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | 1.00E-02 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Hexane | 4.80E+02 | NA | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 U | 5 U |
| Isopropylbenzene (Cumene) | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | **1.8** | **1.4** | **2.6** |
| m,p-Xylenes | NA | NA | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Methyl Tert Butyl Ether (MTBE) | 2.43E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Methylene chloride (Dichloromethane) | 5.00E+00 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | **5.8 LC** | 5 U |
| Naphthalene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | **1.6** | **1.2** | **3.2** |
| o-Xylene | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Styrene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 2.40E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Toluene | 5.30E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-Dichloroethene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | 2.20E-01 | NA | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| Trichloroethene | 3.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Trichlorofluoromethane (CFC-11) | 2.40E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-3D<br>MW-3D-20221103<br>11/03/2022<br>211083-04 | MW-3D<br>MW-3D-20230213<br>02/13/2023<br>02-171-07 | MW-3D<br>MW-3D-20230510<br>05/10/2023<br>2305-121-03 | MW-3D<br>MW-3D-20230815<br>08/15/2023<br>2308213-003A | MW-3D<br>MW-3DD-20230815<br>08/15/2023<br>2308213-005A | MW-3S<br>MW-3S-20220629<br>06/29/2022<br>06-347-03 | MW-3S<br>MW-3SD-20220629<br>06/29/2022<br>06-347-04 | MW-3S<br>MW-3S-20230213<br>02/13/2023<br>02-171-06 |
|---|---|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | 2.00E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Xylene (Total) | 5.70E+01 | NA | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| **Semi-Volatile Organic Compounds (µg/L)** | | | | | | | | | | |
| 1-Methylnaphthalene | 8.58E-01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | **6.2** | **4.7** | **6.4 J** |
| 2-Methylnaphthalene | 3.20E+01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | **2.8** | **2.1** | **0.66** |
| Acenaphthene | 3.00E+01 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.88** | **0.84** | **0.86** |
| Acenaphthylene | NA | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Anthracene | 1.00E+02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.12** | **0.11** | **0.13** |
| Benzo(a)anthracene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(a)pyrene | 1.60E-05 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(b)fluoranthene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(g,h,i)perylene | NA | NA | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U |
| Benzo(k)fluoranthene | 1.60E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Chrysene | 9.83E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Dibenz(a,h)anthracene | 1.60E-05 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Fluoranthene | 2.03E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.033** | 0.02 U | **0.027** |
| Fluorene | 1.00E+01 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **2.2** | **1.7** | **2** |
| Indeno(1,2,3-cd)pyrene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Naphthalene, Total | NA | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | **9** | **6.8** | **7.06 J** |
| Naphthalene | 1.60E+02 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Phenanthrene | NA | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **1.4** | **1.2** | **0.94** |
| Pyrene | 1.47E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | **0.033** | **0.024** | **0.049** |
| cPAHs-TEQ | 4.34E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.02 U |
| **Semi-Volatile Organic Compounds (SIM) (µg/L)** | | | | | | | | | | |
| Acenaphthene | 3.00E+01 | NA | - | - | - | - | - | - | - | - |
| Acenaphthylene | NA | NA | - | - | - | - | - | - | - | - |
| Anthracene | 1.00E+02 | NA | - | - | - | - | - | - | - | - |
| Benzo(a)anthracene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Benzo(a)pyrene | 1.60E-05 | NA | - | - | - | - | - | - | - | - |
| Benzo(b)fluoranthene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Benzo(g,h,i)perylene | NA | NA | - | - | - | - | - | - | - | - |
| Benzo(k)fluoranthene | 1.60E-03 | NA | - | - | - | - | - | - | - | - |
| Chrysene | 9.83E-03 | NA | - | - | - | - | - | - | - | - |
| Dibenz(a,h)anthracene | 1.60E-05 | NA | - | - | - | - | - | - | - | - |
| Fluoranthene | 2.03E-02 | NA | - | - | - | - | - | - | - | - |
| Fluorene | 1.00E+01 | NA | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Naphthalene | 1.60E+02 | NA | - | - | - | - | - | - | - | - |
| Phenanthrene | NA | NA | - | - | - | - | - | - | - | - |
| Pyrene | 1.47E-02 | NA | - | - | - | - | - | - | - | - |
| **Total Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Gasoline Range Organics | 1.00E+03 | NA | 100 U | 100 U | 100 U | 100 U | 100 U | **260** | **260** | **430** |
| Total Petroleum Hydrocarbons (C10-C25) DRO | NA | NA | 50 U | 50 U | 50 U | **83** | **57** | **3300** | **3200** | **2900** |
| Total Petroleum Hydrocarbons (C25-C36) ORO | NA | NA | 250 U | 250 U | 250 US | 250 U | 250 U | **1800** | **1800** | **1200** |
| Diesel Range + Oil Range Organics | 5.00E+02 | NA | 250 U | 250 U | 250 U | **83** | **57** | **5100** | **5000** | **4100** |
| Total Petroleum Hydrocarbons | NA | NA | 250 U | 250 U | 250 U | **83** | **57** | **5360** | **5260** | **4530** |
| **Extractable Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | - | 40 UJ | 49.1 U | 39.7 UJ | 39.7 UJ | 39.3 UJ | 41.4 UJ | 39.8 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | - | 40 UJ | 49.1 U | 39.7 U | 39.7 U | **58.2 J** | 41.4 UJ | **37.6 J** |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | - | 40 UJ | 49.1 U | 39.7 UJ | 39.7 UJ | 39.3 U | 41.4 U | 39.8 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | - | 40 UJ | 49.1 U | 39.7 U | 39.7 U | **151 J** | 41.4 UJ | **110 J** |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | - | 40 UJ | 49.1 U | 39.7 UJ | 39.7 UJ | 39.3 U | 41.4 U | 39.8 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | - | 40 UJ | 49.1 U | 39.7 U | 39.7 U | **111 J** | **51.2 J** | **81.8 J** |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | - | 40 UJ | 49.1 U | 39.7 UJ | 39.7 UJ | 39.3 U | 41.4 U | 39.8 U |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | - | **46.4 J** | 49.1 U | 39.7 U | 39.7 U | 39.3 U | 41.4 U | **44.3 J** |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | - | 80 UJ | 98.1 U | 79.5 UJ | 79.4 UJ | 79.7 U | 82.8 U | 79.5 U |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | - | 80 UJ | **102** | 79.5 U | 79.4 U | 79.7 U | 82.8 U | 79.5 UJ |
| **Volatile Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | - | 50 U | 50 U | 40 U | 40 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | - | 50 U | 50 U | 40 U | 40 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | - | 50 U | 50 U | 40 U | 40 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | - | 50 U | 50 U | 40 U | 40 U | 50 UJ | 50 UJ | 50 U |
| Total Aliphatic | NA | NA | - | - | 0 U | - | - | - | - | - |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-3D<br>MW-3D-20221103<br>11/03/2022<br>211083-04 | MW-3D<br>MW-3D-20230213<br>02/13/2023<br>02-171-07 | MW-3D<br>MW-3D-20230510<br>05/10/2023<br>2305-121-03 | MW-3D<br>MW-3D-20230815<br>08/15/2023<br>2308213-003A | MW-3D<br>MW-3DD-20230815<br>08/15/2023<br>2308213-005A | MW-3S<br>MW-3S-20220629<br>06/29/2022<br>06-347-03 | MW-3S<br>MW-3SD-20220629<br>06/29/2022<br>06-347-04 | MW-3S<br>MW-3S-20230213<br>02/13/2023<br>02-171-06 |
|---|---|---|---|---|---|---|---|---|---|---|
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | - | 50 U | 50 U | 40 U | 40 U | **57** | 50 U | **68** |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | - | 50 U | 50 U | 40 U | 40 U | **140 J** | 50 UJ | **120** |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | - | **100** | 50 U | 40 U | 40 U | **570 J** | 50 UJ | **110** |
| Total Aromatic | NA | NA | - | - | 0 U | - | - | - | - | - |
| Benzene | 4.40E-01 | NA | - | 1 U | 1 U | - | - | 10 U | 10 U | 1 U |
| Ethylbenzene | 1.20E+01 | NA | - | 1 U | 1 U | - | - | 1 U | 1 U | 1 U |
| m,p-Xylenes | NA | NA | - | 1 U | 1 U | - | - | 1 U | 1 U | 1 U |
| Methyl Tert Butyl Ether (MTBE) | 2.43E+01 | NA | - | 10 U | 10 U | - | - | 10 U | 10 U | 10 U |
| o-Xylene | NA | NA | - | 1 U | 1 U | - | - | 1 U | 1 U | 1 U |
| Toluene | 5.30E+01 | NA | - | 1 U | 1 U | - | - | 1 U | 1 U | 1 U |
| Xylene (Total) | 5.70E+01 | NA | - | 1 U | 1 U | - | - | 1 U | 1 U | 1 U |
| **Polychlorinated Biphenyls (µg/L)** | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1262 (PCB-1262) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1268 (PCB-1268) | NA | NA | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (µg/L)** | | | | | | | | | | |
| Arsenic, Dissolved | 1.27E-02 | 8 | 1 U | 1 U | 1 US | **0.513** | **0.49** | **1.23** | **1.26** | **1.22** |
| Barium, Dissolved | 1.00E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | **3.28** | **3.22** | **1.61** |
| Cadmium, Dissolved | 4.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium, Dissolved | 7.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Copper, Dissolved | 1.80E+00 | NA | 2 U | 5 U | 5 US | 2 U | 2 U | 2 U | 2 U | 5 U |
| Lead, Dissolved | 2.10E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Mercury, Dissolved | 1.20E-02 | NA | - | - | 1 U | - | - | - | - | - |
| Mercury, Dissolved by 1631E | 1.20E-02 | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Nickel, Dissolved | 1.10E+01 | NA | 1 U | 1 U | **1.01** | **1.51** | **1.57** | **2.08** | **2.16** | **1.16** |
| Selenium, Dissolved | 1.50E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver, Dissolved | 1.70E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc, Dissolved | 2.40E+01 | NA | 2.5 U | 5 U | 5 U | **4.41** | **5.9** | **4.52** | **4.84** | 5 U |
| Chromium VI (Hexavalent) | 1.14E+00 | NA | 11.2 U | 0.0127 UJ | - | 50 U | 50 U | 11.2 UJ | 11.2 UJ | 0.0127 UJ |
| Arsenic, Total | 1.27E-02 | 8 | 1 U | 1 U | 1 U | **0.887** | **0.891** | **1.02** | **1.2** | **1.21** |
| Barium, Total | 1.00E+03 | NA | **1.58** | **4.26** | **1.18** | **4.41** | **4.42** | **3.61** | **3.28** | **1.55** |
| Cadmium, Total | 4.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium, Total | 7.20E+01 | NA | 1 U | 1 U | **1.07** | **2.83** | **2.81** | 1 U | 1 U | 1 U |
| Copper, Total | 1.80E+00 | NA | 5 U | 5 U | 5 US | **3.34** | **3.3** | 2 U | 2 U | 5 U |
| Lead, Total | 2.10E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Mercury, Total | 1.20E-02 | NA | - | - | 1 U | - | - | - | - | - |
| Mercury, Total by 1631E | 1.20E-02 | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | **0.013** | 0.01 U | 0.01 U | 0.01 U |
| Nickel, Total | 1.10E+01 | NA | **1.07** | 1 U | **1.27** | **2.54** | **2.5** | **2.27** | **2.07** | **1.06** |
| Selenium, Total | 1.50E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver, Total | 1.70E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc, Total | 2.40E+01 | NA | 5 U | 5 U | 5 U | **9.69** | **11.6** | **8.81** | **8.96** | 5 U |
| **Other** | | | | | | | | | | |
| Total Suspended Solids (TSS) (µg/L) | NA | NA | **5600** | **20000** | 5000 U | **33000 J** | **91000 J** | **13000** | **16000** | **16000** |
| **Field Parameters** | | | | | | | | | | |
| Temperature (Deg C) | NA | NA | **10.2** | **8.9** | **11.5** | **10** | **10** | **18.3** | **18.3** | **8** |
| Dissolved Oxygen, Field (mg/L) | NA | NA | **4.16** | **6.95** | **7.35** | **4.76** | **4.76** | **1.62** | **1.62** | **0.88** |
| Conductivity, Field (mS/cm) | NA | NA | **0.104** | **0.125** | **0.1506** | **0.199** | **0.199** | **0.268** | **0.268** | **0.264** |
| Oxidation Reduction Potential (ORP), Field (mv) | NA | NA | **101.1** | **89.5** | **97.4** | **141.1** | **141.1** | **1.5** | **1.5** | **-25.4** |
| Turbidity, Field (NTU) | NA | NA | **20.4** | **231.59** | **6.4** | **25** | **25** | **3.2** | **3.2** | **2.12** |
| pH, Field (pH units) | NA | NA | **6.73** | **6.94** | **6.65** | **6.74** | **6.74** | **6.29** | **6.29** | **6.26** |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-3S<br>MW-3S-20230511<br>05/11/2023<br>2305-148-04 | MW-4D<br>MW-4D-20221103<br>11/03/2022<br>211083-05 | MW-4D<br>MW-4D-20230213<br>02/13/2023<br>02-171-09 | MW-4D<br>MW-4D-20230510<br>05/10/2023<br>2305-121-04 | MW-4D<br>MW-4D-20230815<br>08/15/2023<br>2308213-004A | MW-4S<br>MW-4S-20220629<br>06/29/2022<br>06-347-05 | MW-4S<br>MW-4S-20230213<br>02/13/2023<br>02-171-08 | MW-4S<br>MW-4S-20230511<br>05/11/2023<br>2305-148-05 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (µg/L)** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 1.68E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | 2.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | 1.00E-01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,1,2-Trichloroethane | 3.50E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-Dichloroethane | 7.68E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | 7.00E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloropropene | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | 6.40E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichloropropane | 3.80E-04 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | 3.60E-02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trimethylbenzene | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | 1.40E-01 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | 5.00E-02 | NA | 1 U | 1 U | 1 U | 1 U | 0.01 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | 6.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | 4.81E+00 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,2-Dichloropropane | 7.10E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-Trimethylbenzene | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | 2.00E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichloropropane | 2.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | 5.98E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2,2-Dichloropropane | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone (Methyl Ethyl Ketone) | 4.80E+03 | NA | 20 US | 20 U | 20 U | 20 US | 20 U | 20 U | 20 U | 20 US |
| 2-Chlorotoluene | 1.60E+02 | NA | **3.9** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone (Methyl Butyl Ketone) | 4.00E+01 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Phenylbutane (sec-Butylbenzene) | 8.00E+02 | NA | **1** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Chlorotoluene | 1.60E+02 | NA | **1.3** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 6.40E+02 | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Acetone | 7.20E+03 | NA | 50 US | 50 U | 50 UJ | 50 US | 50 U | 50 U | 50 UJ | 50 US |
| Benzene | 4.40E-01 | NA | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U |
| Bromobenzene | 6.40E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromodichloromethane | 7.30E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Bromoform | 4.60E+00 | NA | 5 US | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 US |
| Bromomethane (Methyl Bromide) | 1.12E+01 | NA | 5 US | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 US |
| Carbon tetrachloride | 2.00E-01 | NA | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 UJ |
| Chlorobenzene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroform (Trichloromethane) | 1.41E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloromethane (Methyl Chloride) | NA | NA | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| cis-1,2-Dichloroethene | 1.60E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | 2.20E-01 | NA | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| Cymene (p-Isopropyltoluene) | 3.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibromochloromethane | 6.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Dibromomethane | 8.00E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane (CFC-12) | 1.60E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 1.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | 1.00E-02 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Hexane | 4.80E+02 | NA | 5 US | 5 U | 5 U | 5 US | 5 U | 5 U | 5 U | 5 US |
| Isopropylbenzene (Cumene) | 8.00E+02 | NA | **1.3** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| m,p-Xylenes | NA | NA | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Methyl Tert Butyl Ether (MTBE) | 2.43E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Methylene chloride (Dichloromethane) | 5.00E+00 | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Naphthalene | 1.60E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | 8.00E+02 | NA | **1.4** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| o-Xylene | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Styrene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | 8.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 2.40E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Toluene | 5.30E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-Dichloroethene | 1.00E+02 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | 2.20E-01 | NA | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U |
| Trichloroethene | 3.00E-01 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Trichlorofluoromethane (CFC-11) | 2.40E+03 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-3S<br>MW-3S-20230511<br>05/11/2023<br>2305-148-04 | MW-4D<br>MW-4D-20221103<br>11/03/2022<br>211083-05 | MW-4D<br>MW-4D-20230213<br>02/13/2023<br>02-171-09 | MW-4D<br>MW-4D-20230510<br>05/10/2023<br>2305-121-04 | MW-4D<br>MW-4D-20230815<br>08/15/2023<br>2308213-004A | MW-4S<br>MW-4S-20220629<br>06/29/2022<br>06-347-05 | MW-4S<br>MW-4S-20230213<br>02/13/2023<br>02-171-08 | MW-4S<br>MW-4S-20230511<br>05/11/2023<br>2305-148-05 |
|---|---|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | 2.00E-02 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Xylene (Total) | 5.70E+01 | NA | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| **Semi-Volatile Organic Compounds (µg/L)** | | | | | | | | | | |
| 1-Methylnaphthalene | 8.58E-01 | NA | **1.9** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 2-Methylnaphthalene | 3.20E+01 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Acenaphthene | 3.00E+01 | NA | **0.34** | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Acenaphthylene | NA | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Anthracene | 1.00E+02 | NA | **0.083** | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(a)anthracene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(a)pyrene | 1.60E-05 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(b)fluoranthene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Benzo(g,h,i)perylene | NA | NA | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U |
| Benzo(k)fluoranthene | 1.60E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Chrysene | 9.83E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Dibenz(a,h)anthracene | 1.60E-05 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Fluoranthene | 2.03E-02 | NA | **0.044** | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Fluorene | 1.00E+01 | NA | **0.91** | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Indeno(1,2,3-cd)pyrene | 1.60E-04 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Naphthalene, Total | NA | NA | **1.9** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Naphthalene | 1.60E+02 | NA | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Phenanthrene | NA | NA | **0.17** | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Pyrene | 1.47E-02 | NA | **0.056 J** | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| cPAHs-TEQ | 4.34E-03 | NA | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.015 U | 0.015 U | 0.02 U | 0.02 U |
| **Semi-Volatile Organic Compounds (SIM) (µg/L)** | | | | | | | | | | |
| Acenaphthene | 3.00E+01 | NA | - | - | - | - | - | - | - | - |
| Acenaphthylene | NA | NA | - | - | - | - | - | - | - | - |
| Anthracene | 1.00E+02 | NA | - | - | - | - | - | - | - | - |
| Benzo(a)anthracene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Benzo(a)pyrene | 1.60E-05 | NA | - | - | - | - | - | - | - | - |
| Benzo(b)fluoranthene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Benzo(g,h,i)perylene | NA | NA | - | - | - | - | - | - | - | - |
| Benzo(k)fluoranthene | 1.60E-03 | NA | - | - | - | - | - | - | - | - |
| Chrysene | 9.83E-03 | NA | - | - | - | - | - | - | - | - |
| Dibenz(a,h)anthracene | 1.60E-05 | NA | - | - | - | - | - | - | - | - |
| Fluoranthene | 2.03E-02 | NA | - | - | - | - | - | - | - | - |
| Fluorene | 1.00E+01 | NA | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | 1.60E-04 | NA | - | - | - | - | - | - | - | - |
| Naphthalene | 1.60E+02 | NA | - | - | - | - | - | - | - | - |
| Phenanthrene | NA | NA | - | - | - | - | - | - | - | - |
| Pyrene | 1.47E-02 | NA | - | - | - | - | - | - | - | - |
| **Total Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Gasoline Range Organics | 1.00E+03 | NA | **180** | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| Total Petroleum Hydrocarbons (C10-C25) DRO | NA | NA | **1400** | 50 U | 50 U | 65 US | **81** | **1000** | **290** | **280** |
| Total Petroleum Hydrocarbons (C25-C36) ORO | NA | NA | **1600** | 250 U | 250 U | 320 US | 250 U | **1000** | 250 U | **620** |
| Diesel Range + Oil Range Organics | 5.00E+02 | NA | **3000** | 250 U | 250 U | 320 US | **81** | **2000** | **290** | **900** |
| Total Petroleum Hydrocarbons | NA | NA | **3180** | 250 U | 250 U | 320 US | **81** | **2000** | **290** | **900** |
| **Extractable Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | 39.6 U | - | 39.5 U | 39.9 U | 39.8 UJ | 39.2 UJ | 39.9 U | 39.7 U |
| Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | 39.6 U | - | 39.5 UJ | 39.9 U | 39.8 U | **68.6 J** | 39.9 UJ | 39.7 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | NA | NA | 39.6 U | - | 39.5 U | 39.9 U | 39.8 UJ | 39.2 U | 39.9 U | 39.7 U |
| Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | NA | NA | 39.6 U | - | 39.5 UJ | 39.9 U | 39.8 U | **173** | 39.9 UJ | 39.7 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | NA | NA | 39.6 U | - | 39.5 U | 39.9 U | 39.8 UJ | 39.2 U | 39.9 U | 39.7 U |
| Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | NA | NA | 39.6 U | - | 39.5 UJ | 39.9 U | 39.8 U | **115** | 39.9 UJ | 39.7 U |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | NA | NA | **90.9** | - | 39.5 U | 39.9 U | 39.8 UJ | 39.2 U | 39.9 U | **93.2** |
| Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | NA | NA | 39.6 U | - | 39.5 UJ | 39.9 U | 39.8 U | 39.2 U | **37.2 J** | **222** |
| Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | **129** | - | 79 U | **116** | 79.5 UJ | 78.5 U | 79.9 U | **117** |
| Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | **138** | - | 79 UJ | **125** | 79.5 U | 78.5 U | **35.6 J** | **132** |
| **Volatile Petroleum Hydrocarbons (µg/L)** | | | | | | | | | | |
| Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | NA | NA | 50 U | - | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | NA | NA | 50 U | - | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | NA | NA | 50 U | - | 50 U | 50 U | 40 U | 50 U | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | NA | NA | 50 U | - | 50 U | 50 U | 40 U | 50 UJ | 50 U | 50 U |
| Total Aliphatic | NA | NA | 0 U | - | - | 0 U | - | - | - | 0 U |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name<br>Sample Name<br>Sample Date<br>Lab Sample ID | Most Conservative PCUL-SLUG GW-1 through GW-3 | Natural Background Metals | MW-3S<br>MW-3S-20230511<br>05/11/2023<br>2305-148-04 | MW-4D<br>MW-4D-20221103<br>11/03/2022<br>211083-05 | MW-4D<br>MW-4D-20230213<br>02/13/2023<br>02-171-09 | MW-4D<br>MW-4D-20230510<br>05/10/2023<br>2305-121-04 | MW-4D<br>MW-4D-20230815<br>08/15/2023<br>2308213-004A | MW-4S<br>MW-4S-20220629<br>06/29/2022<br>06-347-05 | MW-4S<br>MW-4S-20230213<br>02/13/2023<br>02-171-08 | MW-4S<br>MW-4S-20230511<br>05/11/2023<br>2305-148-05 |
|---|---|---|---|---|---|---|---|---|---|---|
| Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | NA | NA | 50 U | - | 50 U | 50 U | 40 U | **52** | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | NA | NA | **73** | - | 50 U | 50 U | 40 U | **130 J** | 50 U | 50 U |
| Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | NA | NA | **310** | - | 50 U | 50 U | 40 U | **460** | 50 U | 50 U |
| Total Aromatic | NA | NA | **390** | - | - | 0 U | - | - | - | 0 U |
| Benzene | 4.40E-01 | NA | 1 U | - | 1 U | 1 U | - | 10 U | 1 U | 1 U |
| Ethylbenzene | 1.20E+01 | NA | 1 U | - | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| m,p-Xylenes | NA | NA | 1 U | - | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| Methyl Tert Butyl Ether (MTBE) | 2.43E+01 | NA | 10 U | - | 10 U | 10 U | - | 10 U | 10 U | 10 U |
| o-Xylene | NA | NA | 1 U | - | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| Toluene | 5.30E+01 | NA | 1 U | - | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| Xylene (Total) | 5.70E+01 | NA | 1 U | - | 1 U | 1 U | - | 1 U | 1 U | 1 U |
| **Polychlorinated Biphenyls (µg/L)** | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1262 (PCB-1262) | NA | NA | - | - | - | - | - | - | - | - |
| Aroclor-1268 (PCB-1268) | NA | NA | - | - | - | - | - | - | - | - |
| **Inorganic Compounds (µg/L)** | | | | | | | | | | |
| Arsenic, Dissolved | 1.27E-02 | 8 | 1 U | 1 U | 1 U | 1 US | **0.478** | 1 U | 1 U | 1 U |
| Barium, Dissolved | 1.00E+03 | NA | **1.93** | 1 U | 1 U | 1 U | **1.15** | **5.37** | **3.67** | **2.8** |
| Cadmium, Dissolved | 4.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium, Dissolved | 7.20E+01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Copper, Dissolved | 1.80E+00 | NA | 5 U | 2 U | 5 U | 5 US | 2 U | 2 U | 5 U | 5 U |
| Lead, Dissolved | 2.10E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Mercury, Dissolved | 1.20E-02 | NA | - | - | - | 1 U | - | - | - | - |
| Mercury, Dissolved by 1631E | 1.20E-02 | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Nickel, Dissolved | 1.10E+01 | NA | **1.39** | 1 U | 1 U | 1 U | **1.12** | **2.19** | **1.32** | **1.56** |
| Selenium, Dissolved | 1.50E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver, Dissolved | 1.70E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc, Dissolved | 2.40E+01 | NA | 5 US | 2.5 U | 5 U | 5 U | **10.7** | 2.5 U | 5 U | 5 US |
| Chromium VI (Hexavalent) | 1.14E+00 | NA | 50 US | 11.2 U | 0.0127 UJ | - | 50 U | 11.2 UJ | 0.0127 UJ | 50 US |
| Arsenic, Total | 1.27E-02 | 8 | **2.51** | 1 U | 1 U | 1 U | **3.74** | 1 U | 1 U | 1 U |
| Barium, Total | 1.00E+03 | NA | **34.7** | **2.93** | **8.83** | **1.86** | **45.4** | **5.19** | **3.87** | **2.56** |
| Cadmium, Total | 4.20E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chromium, Total | 7.20E+01 | NA | - | 1 U | **1.62** | **2.51** | **11.1** | 1 U | 1 U | 1 U |
| Copper, Total | 1.80E+00 | NA | - | 5 U | 5 U | 5 US | **21.6** | 2 U | 5 U | 5 U |
| Lead, Total | 2.10E+00 | NA | **4.86** | 1 U | 1 U | 1 U | **3.09** | 1 U | 1 U | 1 U |
| Mercury, Total | 1.20E-02 | NA | - | - | - | 1 U | - | - | - | - |
| Mercury, Total by 1631E | 1.20E-02 | NA | **0.047** | 0.01 U | 0.01 U | 0.01 U | **0.011** | 0.01 U | 0.01 U | 0.01 U |
| Nickel, Total | 1.10E+01 | NA | - | **1.17** | **1.39** | **1.4** | **6.73** | **2.06** | **1.33** | **1.37** |
| Selenium, Total | 1.50E+00 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver, Total | 1.70E-01 | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Zinc, Total | 2.40E+01 | NA | - | 5 U | 5 U | 5 U | **43.5** | 2.5 U | 5 U | 5 US |
| **Other** | | | | | | | | | | |
| Total Suspended Solids (TSS) (µg/L) | NA | NA | **270000** | **13000** | **40000** | 5000 U | **170000** | 5000 U | 5000 U | **11000** |
| **Field Parameters** | | | | | | | | | | |
| Temperature (Deg C) | NA | NA | **20.4** | **10.3** | **10.2** | **10.2** | **12.5** | **13.9** | **7.9** | **16.3** |
| Dissolved Oxygen, Field (mg/L) | NA | NA | **4.32** | **6.2** | **7.74** | **8.26** | **6.22** | **1.66** | **2.05** | **3.11** |
| Conductivity, Field (mS/cm) | NA | NA | **0.3052** | **0.103** | **0.115** | **0.1295** | **0.202** | **0.231** | **0.272** | **0.2888** |
| Oxidation Reduction Potential (ORP), Field (mv) | NA | NA | **-22.9** | **73.1** | **103.5** | **120.8** | **184.3** | **52.9** | **64** | **8.8** |
| Turbidity, Field (NTU) | NA | NA | **100.3** | **38.4** | **67.44** | **5.7** | **28** | **2.1** | **11.13** | **5.6** |
| pH, Field (pH units) | NA | NA | **6.3** | **6.73** | **6.75** | **6.52** | **6.55** | **6.39** | **6.34** | **6.37** |

**TABLE 5**
**SUMMARY OF GROUNDWATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

***Notes:***
*cPAH-TEQ: carcinogenic Polycyclic Aromatic Hydrocarbons Toxic Equivalent Concentration*
***Bold*** *values indicate a detected concentration.*
*Blue shading indicates a detected analyte concentration exceeding the most conservative PCUL-SLUG GW-1 through GW-3*

*GW-1 Protect Drinking Water PW*
*GW-2 Protect Surface Water SW-FW*
*GW-3 Protect Sediment PartitFW*

*µg/L: micrograms per liter*
*J: Value is estimated*
*J-: Value is estimated, biased low*
*NA: No Action level established*
*mg/L: milligrams per liter*
*mS/cm: milliSiemen per centimeter*
*mv: millvolts*
*NTU: Nephelometric Turbidity Units*
*PCUL: Preliminary Cleanup Level*
*QAPP: Quality Assurance Project Plan*
*R: the data are unuasable*
*S: laboratory reporting limit exceeds limit listed in the QAAP*
*U: not detected, value is the laboratory reporting limit*
*lc: the presence of the analyte is likely due to laboratory contamination*

**TABLE 6**
**SUMMARY OF SURFACE WATER QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name | Action Level | | SW-1 | | SW-2 | | SW-3 | |
|---|---|---|---|---|---|---|---|---|
| Sample Name | WQPP Indicator Lake (Lake Elevation >720 ft) | WQPP Indicator Riverine (Lake Elevation <720 ft) | SW-1-20220628 | SW-1-20221103 | SW-2-20220628 | SW-2-20221103 | SW-3-20220628 | SW-3-20221103 |
| Sample Date | | | 06/28/2022 | 11/03/2022 | 06/28/2022 | 11/03/2022 | 06/28/2022 | 11/03/2022 |
| Lab Sample ID | | | 206499-01<br>2206479-001 | 211082-01<br>2211108-001A | 206499-02<br>2206479-002 | 211082-02<br>2211108-002A | 206499-03<br>2206479-003 | 211082-03<br>2211108-003A |
| Riffe Lake Elevation (ft) | | | 747.58 | 702.59 | 747.58 | 702.59 | 747.58 | 702.59 |
| **Volatile Organic Compounds (µg/L)** | | | | | | | | |
| Benzene | NA | NA | 0.2 U | - | 0.2 U | - | 0.2 U | - |
| Ethylbenzene | NA | NA | 0.2 U | - | 0.2 U | - | 0.2 U | - |
| m,p-Xylenes | NA | NA | 0.4 U | - | 0.4 U | - | 0.4 U | - |
| o-Xylene | NA | NA | 0.2 U | - | 0.2 U | - | 0.2 U | - |
| Toluene | NA | NA | 0.2 U | - | 0.2 U | - | 0.2 U | - |
| Xylene (Total) | NA | NA | 0.4 U | - | 0.4 U | - | 0.4 U | - |
| Total BTEX | 2 | 2 | 1 U | - | 1 U | - | 1 U | - |
| **Polycyclic Aromatic Hydrocarbons Compounds (µg/L)** | | | | | | | | |
| Benzo(a)anthracene | 23.4 | 23.4 | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Benzo(a)pyrene | 7.5 | 7.5 | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Benzo(b)fluoranthene | 14.4 | 14.4 | 0.01 U | 0.015 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Benzo(k)fluoranthene | 7.5 | 7.5 | 0.01 U | 0.015 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Chrysene | 7.5 | 7.5 | 0.01 U | 0.015 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Dibenz(a,h)anthracene | NA | NA | 0.01 U | 0.015 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Indeno(1,2,3-cd)pyrene | 11.1 | 11.1 | 0.01 U | 0.015 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Pyrene | 5.7 | 5.7 | 0.01 U | - | 0.01 U | - | 0.01 U | - |
| **Total Petroleum Hydrocarbons (µg/L)** | | | | | | | | |
| Gasoline Range Organics | 250 | 250 | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| Total Petroleum Hydrocarbons (C10-C25) DRO | 250 | 250 | 50 U | 50 U | 50 U | **50** | 50 U | 50 U |
| Total Petroleum Hydrocarbons (C25-C36) ORO | 250 | 250 | 200 U | 250 U | 200 U | 250 U | 200 U | 250 U |
| Benzene | NA | NA | - | 1 U | - | 1 U | - | 1 U |
| Toluene | NA | NA | - | 1 U | - | 1 U | - | 1 U |
| Ethylbenzene | NA | NA | - | 1 U | - | 1 U | - | 1 U |
| Xylene (Total) | NA | NA | - | 3 U | - | 3 U | - | 3 U |
| Total BTEX | 2 | 2 | - | 6 U | - | 6 U | - | 6 U |
| **Inorganic Compounds (µg/L)** | | | | | | | | |
| Chromium VI (Hexavalent) | 15 | 15 | 11.2 U | 11.2 UJ | 11.2 U | 11.2 UJ | 11.2 U | 11.2 UJ |
| Mercury | 2.1 | 2.1 | - | 0.01 U | - | 0.01 U | - | 0.01 U |
| Arsenic, Total | 360 | 360 | 0.5 U | 1 UJ | 0.5 U | 1 UJ | 0.5 U | 1 UJ |
| Cadmium, Total | 1 | 1.5 | 0.25 U | 1 U | 0.25 U | 1 U | 0.25 U | 1 U |
| Calcium, Total | NA | NA | - | - | - | - | - | - |
| Chromium, Total | NA | NA | - | **1.01** | - | 1 U | - | **1.3** |
| Copper, Total | 5 | 7.2 | 2 U | - | 2 U | - | 2 U | - |
| Hardness as CaCO3, Total | NA | NA | - | - | - | - | - | - |
| Lead, Total | 15.1 | 23.5 | 0.5 U | 1 U | 0.5 U | 1 U | 0.5 U | 1 U |
| Magnesium, Total | NA | NA | - | - | - | - | - | - |
| Mercury, Total | 2.1 | 2.1 | 0.0008 U | - | 0.0008 U | - | 0.0008 U | - |
| Nickel, Total | 467.5 | 652 | 0.5 U | 1 U | 0.5 U | 1 U | 0.5 U | 1 U |
| Zinc, Total | 37.7 | 52.7 | 2.5 U | 5 U | 2.5 U | 5 U | 2.5 U | 5 U |
| **Field Parameters** | | | | | | | | |
| Turbidity, Field (NTU) | NA | NA | **6.1** | **0** | **4.3** | **0** | **4.5** | **0** |
| pH, Field (pH units) | NA | NA | **7.55** | **7.69** | **7.57** | **7.27** | **7.53** | **7.55** |

***Notes:***

***Bold*** *values indicate a detected concentration.*
*WQPP: Water Quality Protection Plan for Kosmos activities 9 September 2021 (lake)*
*-: not analyzed or not available*
*µg/L: micrograms per Liter*
*J: value is an estimate*
*U: not detected, value is the laboratory reporting limit*
*NA: No Action level established*
*WQPP: Water Quality Protection Plan*

**TABLE 7**
**SUMMARY OF SEDIMENT QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

| Location Name | SMS Freshwater Sediment (a) SCO | SS-1 | SS-1-S1 | SS-2 | SS-3 | SS-4 | SS-4-S1 | SS-5 | SS-6 | SS-7a | SS-7-R-S1 | SS-8 | SS-8-S1 | SS-9 | SS-10 | SS-11 | SS-11-S1 | SS-12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | | SS-1-0.75 | SS-1-S1-0.5 | SS-2-0.5 | SS-3-0.5 | SS-4-1.5 | SS-4-S1-0.5 | SS-5-0.5 | SS-6-0.5 | SS-7A-0.5 | SS-7-R-S1-0.5 | SS-8-0.5 | SS-8-S1-0.5 | SS-9-0.5 | SS-10-0.5 | SS-11-0.5 | SS-11-S1-0.5 | SS-12-0.5 |
| Sample Date | | 10/17/2022 | 04/27/2022 | 10/17/2022 | 10/17/2022 | 10/17/2022 | 04/27/2022 | 10/17/2022 | 10/17/2022 | 10/17/2022 | 04/27/2022 | 10/17/2022 | 04/27/2022 | 10/17/2022 | 10/17/2022 | 10/17/2022 | 04/27/2022 | 10/17/2022 |
| Lab Sample ID | | 210248-01<br>2210299-001A | 580-113209-1 | 210248-02<br>2210299-002A | 210248-03<br>2210299-003A | 210248-06<br>2210299-006A | 580-113209-4 | 210248-07<br>2210299-007A | 210248-08<br>2210299-008A | 210248-09<br>2210299-009A | 580-113209-3 | 210248-10<br>2210299-010A | 580-113209-5 | 210248-11<br>2210299-011A | 210248-12<br>2210299-012A | 210248-13<br>2210299-013A | 580-113209-6 | 210248-14<br>2210299-014A |
| Sample Depth (bgs) | | 0.8 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 1.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) |
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | NA | 0.05 U | 0.0054 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0034 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0039 UJ | 0.05 U | 0.0027 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0042 UJ | 0.05 U |
| 1,1,1-Trichloroethane | NA | 0.002 U | 0.0036 UJ | 0.002 U | 0.002 U | 0.002 U | 0.0022 UJ | 0.002 U | 0.002 U | 0.002 U | 0.0026 UJ | 0.002 U | 0.0018 UJ | 0.002 U | 0.002 U | 0.002 U | 0.0028 UJ | 0.002 U |
| 1,1,2,2-Tetrachloroethane | NA | 0.05 U | 0.0072 U | 0.05 U | 0.05 U | 0.05 U | 0.0045 U | 0.05 U | 0.05 U | 0.05 U | 0.0052 U | 0.05 U | 0.0036 U | 0.05 U | 0.05 U | 0.05 U | 0.0057 U | 0.05 U |
| 1,1,2-Trichloroethane | NA | 0.05 U | 0.0036 U | 0.05 U | 0.05 U | 0.05 U | 0.0022 U | 0.05 U | 0.05 U | 0.05 U | 0.0026 U | 0.05 U | 0.0018 U | 0.05 U | 0.05 U | 0.05 U | 0.0028 U | 0.05 U |
| 1,1-Dichloroethane | NA | 0.002 U | 0.0018 UJ | 0.002 U | 0.002 U | 0.002 U | 0.0011 UJ | 0.002 U | 0.002 U | 0.002 U | 0.0013 UJ | 0.002 U | 0.0009 UJ | 0.002 U | 0.002 U | 0.002 U | 0.0014 UJ | 0.002 U |
| 1,1-Dichloroethene | NA | 0.001 U | 0.009 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0056 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0065 UJ | 0.001 U | 0.0045 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0071 UJ | 0.001 U |
| 1,1-Dichloropropene | NA | 0.05 U | 0.0036 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0022 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0026 UJ | 0.05 U | 0.0018 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0028 UJ | 0.05 U |
| 1,2,3-Trichlorobenzene | NA | 0.25 U | 0.0054 U | 0.25 U | 0.25 U | 0.25 U | 0.0034 U | 0.25 U | 0.25 U | 0.25 U | 0.0039 U | 0.25 U | 0.0027 U | 0.25 U | 0.25 U | 0.25 U | 0.0042 U | 0.25 U |
| 1,2,3-Trichloropropane | NA | 0.05 U | 0.009 U | 0.05 U | 0.05 U | 0.05 U | 0.0056 U | 0.05 U | 0.05 U | 0.05 U | 0.0065 U | 0.05 U | 0.0045 U | 0.05 U | 0.05 U | 0.05 U | 0.0071 U | 0.05 U |
| 1,2,4-Trichlorobenzene | NA | 0.25 U | 0.0036 U | 0.25 U | 0.25 U | 0.25 U | 0.0022 U | 0.25 U | 0.25 U | 0.25 U | 0.0026 U | 0.25 U | 0.0018 U | 0.25 U | 0.25 U | 0.25 U | 0.0028 U | 0.25 U |
| 1,2,4-Trimethylbenzene | NA | 0.05 U | 0.009 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0056 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0065 UJ | 0.05 U | 0.0045 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0071 UJ | 0.05 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | NA | 0.5 U | 0.018 U | 0.5 U | 0.5 U | 0.5 U | 0.011 U | 0.5 U | 0.5 U | 0.5 U | 0.013 U | 0.5 U | 0.009 U | 0.5 U | 0.5 U | 0.5 U | 0.014 U | 0.5 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | NA | 0.005 U | 0.0018 U | 0.005 U | 0.005 U | 0.005 U | 0.0011 U | 0.005 U | 0.005 U | 0.005 U | 0.0013 U | 0.005 U | 0.0009 U | 0.005 U | 0.005 U | 0.005 U | 0.0014 U | 0.005 U |
| 1,2-Dichlorobenzene | NA | 0.05 U | 0.018 U | 0.05 U | 0.05 U | 0.05 U | 0.011 U | 0.05 U | 0.05 U | 0.05 U | 0.013 U | 0.05 U | 0.009 U | 0.05 U | 0.05 U | 0.05 U | 0.014 U | 0.05 U |
| 1,2-Dichloroethane | NA | 0.002 U | 0.0018 U | 0.002 U | 0.002 U | 0.002 U | 0.0011 U | 0.002 U | 0.002 U | 0.002 U | 0.0013 U | 0.002 U | 0.0009 U | 0.002 U | 0.002 U | 0.002 U | 0.0014 U | 0.002 U |
| 1,2-Dichloropropane | NA | 0.05 U | 0.0036 U | 0.05 U | 0.05 U | 0.05 U | 0.0022 U | 0.05 U | 0.05 U | 0.05 U | 0.0026 U | 0.05 U | 0.0018 U | 0.05 U | 0.05 U | 0.05 U | 0.0028 U | 0.05 U |
| 1,3,5-Trimethylbenzene | NA | 0.05 U | 0.009 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0056 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0065 UJ | 0.05 U | 0.0045 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0071 UJ | 0.05 U |
| 1,3-Dichlorobenzene | NA | 0.05 U | 0.009 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0056 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0065 UJ | 0.05 U | 0.0045 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0071 UJ | 0.05 U |
| 1,3-Dichloropropane | NA | 0.05 U | 0.0036 U | 0.05 U | 0.05 U | 0.05 U | 0.0022 U | 0.05 U | 0.05 U | 0.05 U | 0.0026 U | 0.05 U | 0.0018 U | 0.05 U | 0.05 U | 0.05 U | 0.0028 U | 0.05 U |
| 1,4-Dichlorobenzene | NA | 0.05 U | 0.009 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0056 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0065 UJ | 0.05 U | 0.0045 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0071 UJ | 0.05 U |
| 2,2-Dichloropropane | NA | 0.05 U | 0.009 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0056 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0065 UJ | 0.05 U | 0.0045 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0071 UJ | 0.05 U |
| 2-Butanone (Methyl Ethyl Ketone) | NA | 1 U | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | 1 U | - | 1 U | - | 1 U | 1 U | 1 U | - | 1 U |
| 2-Chlorotoluene | NA | 0.05 U | 0.009 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0056 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0065 UJ | 0.05 U | 0.0045 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0071 UJ | 0.05 U |
| 2-Hexanone (Methyl Butyl Ketone) | NA | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U | - | 0.5 U | 0.5 U | 0.5 U | - | 0.5 U |
| 2-Phenylbutane (sec-Butylbenzene) | NA | 0.05 U | 0.0054 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0034 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0039 UJ | 0.05 U | 0.0027 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0042 UJ | 0.05 U |
| 4-Chlorotoluene | NA | 0.05 U | 0.009 U | 0.05 U | 0.05 U | 0.05 U | 0.0056 U | 0.05 U | 0.05 U | 0.05 U | 0.0065 U | 0.05 U | 0.0045 U | 0.05 U | 0.05 U | 0.05 U | 0.0071 U | 0.05 U |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | NA | 1 U | - | 1 U | 1 U | 1 U | - | 1 U | 1 U | 1 U | - | 1 U | - | 1 U | 1 U | 1 U | - | 1 U |
| Acetone | NA | 5 U | - | 5 U | 5 U | 5 U | - | 5 U | 5 U | 5 U | - | 5 U | - | 5 U | 5 U | 5 U | - | 5 U |
| Benzene | NA | 0.001 U | 0.0036 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0022 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0026 UJ | 0.001 U | 0.0018 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0028 UJ | 0.001 U |
| Bromobenzene | NA | 0.05 U | 0.018 U | 0.05 U | 0.05 U | 0.05 U | 0.011 U | 0.05 U | 0.05 U | 0.05 U | 0.013 U | 0.05 U | 0.009 U | 0.05 U | 0.05 U | 0.05 U | 0.014 U | 0.05 U |
| Bromodichloromethane | NA | 0.05 U | 0.0018 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0011 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0013 UJ | 0.05 U | 0.0009 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0014 UJ | 0.05 U |
| Bromoform | NA | 0.05 U | 0.009 U | 0.05 U | 0.05 U | 0.05 U | 0.0056 U | 0.05 U | 0.05 U | 0.05 U | 0.0065 U | 0.05 U | 0.0045 U | 0.05 U | 0.05 U | 0.05 U | 0.0071 U | 0.05 U |
| Bromomethane (Methyl Bromide) | NA | 0.5 U | 0.0018 U | 0.5 U | 0.5 U | 0.5 U | 0.0011 U | 0.5 U | 0.5 U | 0.5 U | 0.0013 U | 0.5 U | 0.0009 U | 0.5 U | 0.5 U | 0.5 U | 0.0014 U | 0.5 U |
| Carbon tetrachloride | NA | 0.05 U | 0.0036 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0022 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0026 UJ | 0.05 U | 0.0018 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0028 UJ | 0.05 U |
| Chlorobenzene | NA | 0.05 U | 0.0036 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0022 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0026 UJ | 0.05 U | 0.0018 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0028 UJ | 0.05 U |
| Chlorobromomethane | NA | - | 0.0036 U | - | - | - | 0.0022 U | - | - | - | 0.0026 U | - | 0.0018 U | - | - | - | 0.0028 U | - |
| Chloroethane | NA | 0.1 U | 0.018 U | 0.1 U | 0.1 U | 0.1 U | 0.011 U | 0.1 U | 0.1 U | 0.1 U | 0.013 U | 0.1 U | 0.009 U | 0.1 U | 0.1 U | 0.1 U | 0.014 U | 0.1 U |
| Chloroform (Trichloromethane) | NA | 0.05 U | 0.0036 U | 0.05 U | 0.05 U | 0.05 U | 0.0022 U | 0.05 U | 0.05 U | 0.05 U | 0.0026 U | 0.05 U | 0.0018 U | 0.05 U | 0.05 U | 0.05 U | 0.0028 U | 0.05 U |
| Chloromethane (Methyl Chloride) | NA | 0.5 U | 0.009 U | 0.5 U | 0.5 U | 0.5 U | 0.0056 U | 0.5 U | 0.5 U | 0.5 U | 0.0065 U | 0.5 U | 0.0045 U | 0.5 U | 0.5 U | 0.5 U | 0.0071 U | 0.5 U |
| cis-1,2-Dichloroethene | NA | 0.001 U | 0.0054 U | 0.001 U | 0.001 U | 0.001 U | 0.0034 U | 0.001 U | 0.001 U | 0.001 U | 0.0039 U | 0.001 U | 0.0027 U | 0.001 U | 0.001 U | 0.001 U | 0.0042 U | 0.001 U |
| cis-1,3-Dichloropropene | NA | 0.05 U | 0.0018 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0011 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0013 UJ | 0.05 U | 0.0009 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0014 UJ | 0.05 U |
| Cymene (p-Isopropyltoluene) | NA | 0.05 U | 0.0036 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0022 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0026 UJ | 0.05 U | 0.0018 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0028 UJ | 0.05 U |
| Dibromochloromethane | NA | 0.05 U | 0.0027 U | 0.05 U | 0.05 U | 0.05 U | 0.0017 U | 0.05 U | 0.05 U | 0.05 U | 0.0019 U | 0.05 U | 0.0013 U | 0.05 U | 0.05 U | 0.05 U | 0.0021 U | 0.05 U |
| Dibromomethane | NA | 0.05 U | 0.0036 U | 0.05 U | 0.05 U | 0.05 U | 0.0022 U | 0.05 U | 0.05 U | 0.05 U | 0.0026 U | 0.05 U | 0.0018 U | 0.05 U | 0.05 U | 0.05 U | 0.0028 U | 0.05 U |
| Dichlorodifluoromethane (CFC-12) | NA | 0.5 U | 0.0036 U | 0.5 U | 0.5 U | 0.5 U | 0.0022 U | 0.5 U | 0.5 U | 0.5 U | 0.0026 U | 0.5 U | 0.0018 U | 0.5 U | 0.5 U | 0.5 U | 0.0028 U | 0.5 U |
| Ethylbenzene | NA | 0.001 U | 0.0036 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0022 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0026 UJ | 0.001 U | 0.0018 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0028 UJ | 0.001 U |
| Hexachlorobutadiene | NA | 0.25 U | 0.0054 U | 0.25 U | 0.25 U | 0.25 U | 0.0034 U | 0.25 U | 0.25 U | 0.25 U | 0.0039 U | 0.25 U | 0.0027 U | 0.25 U | 0.25 U | 0.25 U | 0.0042 U | 0.25 U |
| Hexane | NA | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U | - | 0.25 U | 0.25 U | 0.25 U | - | 0.25 U |
| Isopropylbenzene (Cumene) | NA | 0.05 U | 0.0036 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0022 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0026 UJ | 0.05 U | 0.0018 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0028 UJ | 0.05 U |
| m,p-Xylenes | NA | 0.002 U | 0.018 UJ | 0.002 U | 0.002 U | 0.002 U | 0.011 UJ | 0.002 U | 0.002 U | 0.002 U | 0.013 UJ | 0.002 U | 0.009 UJ | 0.002 U | 0.002 U | 0.002 U | 0.014 UJ | 0.002 U |
| Methyl Tert Butyl Ether (MTBE) | NA | 0.001 U | 0.0036 U | 0.001 U | 0.001 U | 0.001 U | 0.0022 U | 0.001 U | 0.001 U | 0.001 U | 0.0026 U | 0.001 U | 0.0018 U | 0.001 U | 0.001 U | 0.001 U | 0.0028 U | 0.001 U |
| Methylene chloride (Dichloromethane) | NA | 0.2 U | 0.072 UJ | 0.2 U | 0.2 U | 0.2 U | 0.045 UJ | 0.2 U | 0.2 U | 0.2 U | 0.052 UJ | 0.2 U | 0.036 UJ | **0.26 J LC** | 0.2 U | **0.21 J LC** | 0.057 UJ | 0.2 U |
| Naphthalene | NA | 0.005 U | 0.018 U | 0.005 U | 0.005 U | 0.005 U | 0.011 U | 0.005 U | 0.005 U | 0.005 U | 0.013 U | 0.005 U | 0.009 U | 0.005 U | 0.005 U | 0.005 U | 0.014 U | 0.005 U |
| n-Butylbenzene | NA | - | 0.0054 UJ | - | - | - | 0.0034 UJ | - | - | - | 0.0039 UJ | - | 0.0027 UJ | - | - | - | 0.0042 UJ | - |
| n-Propylbenzene | NA | 0.05 U | 0.009 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0056 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0065 UJ | 0.05 U | 0.0045 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0071 UJ | 0.05 U |
| o-Xylene | NA | 0.001 U | 0.009 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0056 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0065 UJ | 0.001 U | 0.0045 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0071 UJ | 0.001 U |
| Styrene | NA | 0.05 U | 0.0054 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0034 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0039 UJ | 0.05 U | 0.0027 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0042 UJ | 0.05 U |
| tert-Butylbenzene | NA | 0.05 U | 0.0054 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0034 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0039 UJ | 0.05 U | 0.0027 UJ | 0.05 U | 0.05 U | 0.05 U | 0.0042 UJ | 0.05 U |
| Tetrachloroethene | NA | 0.001 U | 0.0036 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0022 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0026 UJ | 0.001 U | 0.0018 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0028 UJ | 0.001 U |
| Toluene | NA | 0.001 U | 0.018 UJ | 0.001 U | 0.001 U | 0.001 U | 0.011 UJ | 0.001 U | 0.001 U | 0.001 U | 0.013 UJ | 0.001 U | 0.009 UJ | 0.001 U | 0.001 U | 0.001 U | 0.014 UJ | 0.001 U |
| trans-1,2-Dichloroethene | NA | 0.002 U | 0.0036 UJ | 0.002 U | 0.002 U | 0.002 U | 0.0022 UJ | 0.002 U | 0.002 U | 0.002 U | 0.0026 UJ | 0.002 U | 0.0018 UJ | 0.002 U | 0.002 U | 0.002 U | 0.0028 UJ | 0.002 U |
| trans-1,3-Dichloropropene | NA | 0.05 U | 0.018 UJ | 0.05 U | 0.05 U | 0.05 U | 0.011 UJ | 0.05 U | 0.05 U | 0.05 U | 0.013 UJ | 0.05 U | 0.009 UJ | 0.05 U | 0.05 U | 0.05 U | 0.014 UJ | 0.05 U |
| Trichloroethene | NA | 0.001 U | 0.0036 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0022 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0026 UJ | 0.001 U | 0.0018 UJ | 0.001 U | 0.001 U | 0.001 U | 0.0028 UJ | 0.001 U |
| Trichlorofluoromethane (CFC-11) | NA | 0.5 U | 0.0036 U | 0.5 U | 0.5 U | 0.5 U | 0.0022 U | 0.5 U | 0.5 U | 0.5 U | 0.0026 U | 0.5 U | 0.0018 U | 0.5 U | 0.5 U | 0.5 U | 0.0028 U | 0.5 U |

**TABLE 7**
**SUMMARY OF SEDIMENT QUALITY DATA**
FORMER KOSMOS MILL
MORTON, WASHINGTON

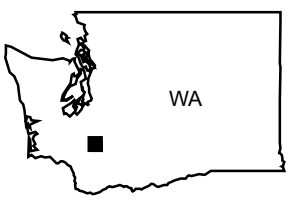
| Location Name | SMS Freshwater Sediment (a) SCO | SS-1 | SS-1-S1 | SS-2 | SS-3 | SS-4 | SS-4-S1 | SS-5 | SS-6 | SS-7a | SS-7-R-S1 | SS-8 | SS-8-S1 | SS-9 | SS-10 | SS-11 | SS-11-S1 | SS-12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | | SS-1-0.75 | SS-1-S1-0.5 | SS-2-0.5 | SS-3-0.5 | SS-4-1.5 | SS-4-S1-0.5 | SS-5-0.5 | SS-6-0.5 | SS-7A-0.5 | SS-7-R-S1-0.5 | SS-8-0.5 | SS-8-S1-0.5 | SS-9-0.5 | SS-10-0.5 | SS-11-0.5 | SS-11-S1-0.5 | SS-12-0.5 |
| Sample Date | | 10/17/2022 | 04/27/2022 | 10/17/2022 | 10/17/2022 | 10/17/2022 | 04/27/2022 | 10/17/2022 | 10/17/2022 | 10/17/2022 | 04/27/2022 | 10/17/2022 | 04/27/2022 | 10/17/2022 | 10/17/2022 | 10/17/2022 | 04/27/2022 | 10/17/2022 |
| Lab Sample ID | | 210248-01<br>2210299-001A | 580-113209-1 | 210248-02<br>2210299-002A | 210248-03<br>2210299-003A | 210248-06<br>2210299-006A | 580-113209-4 | 210248-07<br>2210299-007A | 210248-08<br>2210299-008A | 210248-09<br>2210299-009A | 580-113209-3 | 210248-10<br>2210299-010A | 580-113209-5 | 210248-11<br>2210299-011A | 210248-12<br>2210299-012A | 210248-13<br>2210299-013A | 580-113209-6 | 210248-14<br>2210299-014A |
| Sample Depth (bgs) | | 0.8 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 1.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) | 0.5 (ft) |
| Vinyl chloride | NA | 0.001 U | 0.0036 U | 0.001 U | 0.001 U | 0.001 U | 0.0022 U | 0.001 U | 0.001 U | 0.001 U | 0.0026 U | 0.001 U | 0.0018 U | 0.001 U | 0.001 U | 0.001 U | 0.0028 U | 0.001 U |
| Xylene (Total) | NA | 0.002 U | 0.018 U*-*1 | 0.002 U | 0.002 U | 0.002 U | 0.011 U*-*1 | 0.002 U | 0.002 U | 0.002 U | 0.013 U*-*1 | 0.002 U | 0.009 U*-*1 | 0.002 U | 0.002 U | 0.002 U | 0.014 U*-*1 | 0.002 U |
| **Polycyclic Aromatic Hydrocarbons Compounds (mg/kg)** | | | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | **0.0054** | 0.0049 U | 0.002 U | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| 2-Methylnaphthalene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | 0.002 U | 0.0049 U | 0.002 U | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Acenaphthene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | 0.002 U | 0.0049 U | 0.002 U | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Acenaphthylene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | 0.002 U | 0.0049 U | 0.002 U | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Anthracene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | **0.0038** | 0.0049 U | **0.0035** | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Benzo(a)anthracene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | **0.0028** | 0.0049 U | **0.0035** | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Benzo(a)pyrene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | **0.0044** | 0.0049 U | **0.0066** | **0.036** | 0.002 U | 0.0053 U | 0.002 U |
| Benzo(b)fluoranthene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | 0.002 U | 0.0049 U | 0.002 U | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Benzo(g,h,i)perylene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | **0.0021** | 0.0049 U | **0.0027** | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Benzo(k)fluoranthene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | 0.002 U | 0.0049 U | 0.002 U | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Chrysene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | **0.0085** | **0.0053** | **0.011** | **0.048** | 0.002 U | 0.0053 U | 0.002 U |
| cPAHs-TEQ | NA | 0.002 U | 0.006493 U | 0.002 U | 0.002 U | 0.002 U | 0.0040015 U | 0.002 U | 0.002 U | 0.002 U | 0.004228 U | **0.0052** | **0.003728** | **0.0075** | **0.041** | 0.002 U | 0.0040015 U | 0.002 U |
| Dibenz(a,h)anthracene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | 0.002 U | 0.0049 U | 0.002 U | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Fluoranthene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | 0.002 U | 0.0049 U | **0.0021** | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Fluorene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | **0.0033** | 0.0049 U | **0.0025** | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Indeno(1,2,3-cd)pyrene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | 0.002 U | 0.0049 U | 0.002 U | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Naphthalene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | 0.002 U | 0.0049 U | 0.002 U | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Phenanthrene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | **0.0066** | 0.0049 U | **0.0094** | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| Pyrene | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | **0.011** | **0.0059** | **0.019** | **0.057** | 0.002 U | 0.0053 U | 0.002 U |
| Naphthalene, Total | NA | 0.002 U | 0.0086 U | 0.002 U | 0.002 U | 0.002 U | 0.0053 U | 0.002 U | 0.002 U | 0.002 U | 0.0056 U | **0.0054** | 0.0049 U | 0.002 U | 0.02 U | 0.002 U | 0.0053 U | 0.002 U |
| **Total Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | | | | | |
| Gasoline | NA | - | 11 U | - | - | - | 4.7 U | - | - | - | 11 U | - | 6.8 U | - | - | - | 5.7 U | - |
| Gasoline Range Organics | NA | 5 U | - | 5 U | 5 U | 5 U | - | 5 U | 5 U | 5 U | - | 5 U | - | 5 U | 5 U | 5 U | - | 5 U |
| Total Petroleum Hydrocarbons (C10-C25) DRO | 3.4E+02 | 50 U | 80 U | 50 U | 50 U | 50 U | 62 U | 50 U | 50 U | 50 U | 58 U | 50 U | 53 U | 50 U | 50 U | 50 U | 60 U | 50 U |
| Total Petroleum Hydrocarbons (C24-C36) Motor Oil | 3.6E+03 | - | **150** | - | - | - | 62 U | - | - | - | **110** | - | 53 U | - | - | - | 60 U | - |
| Total Petroleum Hydrocarbons (C25-C36) ORO | 3.6E+03 | 250 U | - | 250 U | 250 U | 250 U | - | 250 U | 250 U | 250 U | - | 250 U | - | 250 U | 250 U | 250 U | - | 250 U |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | | | | | | | | | | |
| Arsenic | 14 | **1.21** | **2.1** | **1.43** | **1.19** | **1.14** | **2.8** | **1.51** | **1.43** | **1.3** | **1.6** | **1.41** | **1.9** | **1.32** | **1.05** | **1.62** | **2.6** | **1.31** |
| Barium | NA | **29.9** | **66** | **29.8** | **36** | **33.3** | **38** | **28.2** | **33.5** | **30.8** | **37** | **31.8** | **31** | **29.1** | **40.5** | **36.3** | **27** | **43.4** |
| Cadmium | 2.1 | 1 U | 1 U | 1 U | 1 U | 1 U | 0.82 U | 1 U | 1 U | 1 U | 0.75 U | 1 U | 0.66 U | 1 U | 1 U | 1 U | 0.75 U | 1 U |
| Chromium | 72 | **6.88** | **27** | **7.24** | **11.2** | **11.2** | **16** | **7.49** | **6.43** | **10.7** | **14** | **8.29** | **12** | **8.72** | **10.5** | **9.09** | **8.5** | **10.5** |
| Chromium III (Trivalent) | NA | - | **27** | - | - | - | **16** | - | - | - | **14** | - | **12** | - | - | - | **8.5** | - |
| Chromium VI (Hexavalent) | NA | 0.639 U | 3.8 U | 0.606 U | 0.644 U | 0.648 U | 0.5 U | 0.634 U | 0.612 U | 0.643 U | 0.51 U | 0.65 U | 0.5 U | 0.642 U | 0.675 U | 0.665 U | 0.49 U | 0.658 U |
| Copper | 400 | **33** | **65** | **42.1** | **45.5** | **40** | **51** | **48.7** | **39.6** | **68.6** | **42** | **63.4** | **42** | **59.1** | **55** | **53** | **48** | **53.5** |
| Lead | 360 | **1.61** | **4.2** | **1.61** | **2.32** | **1.76** | **2.5** | **1.5** | **1.86** | **1.72** | **2** | **1.44** | **12** | **1.93** | **2.41** | **1.73** | **2.6** | **2** |
| Mercury | 0.66 | 0.1 U | **0.051** | 0.1 U | 0.1 U | 0.1 U | 0.032 U | 0.1 U | 0.1 U | 0.1 U | 0.03 U | 0.1 U | 0.027 U | 0.1 U | 0.1 U | 0.1 U | 0.035 U | 0.1 U |
| Nickel | 26 | **6.96** | **21** | **11.6** | **11.9** | **11** | **16** | **10.4** | **9.98** | **11.5** | **13** | **9.95** | **10** | **10** | **10.7** | **10.3** | **9.6** | **11.5** |
| Selenium | 11 | 1 UJ | **3.3** | 1 UJ | 1 UJ | 1 UJ | **2.2** | 1 UJ | 1 UJ | 1 UJ | **2.1** | 1 UJ | **2.6** | 1 UJ | 1 UJ | 1 UJ | **2.8** | 1 UJ |
| Silver | 0.57 | 1 U | 0.25 U | 1 U | 1 U | 1 U | 0.2 U | 1 U | 1 U | 1 U | 0.19 U | 1 U | 0.16 U | 1 U | 1 U | 1 U | 0.19 U | 1 U |
| Zinc | 3200 | **36.1** | **62** | **43.7** | **47.9** | **44.7** | **51** | **48.7** | **44.9** | **48** | **48** | **41.5** | **55** | **48.4** | **46.4** | **41.7** | **50** | **43.3** |
| **Other** | | | | | | | | | | | | | | | | | | |
| Total Organic Carbon (TOC) (%) | NA | **0.165** | - | **0.496** | **0.225** | **0.508** | - | **0.479** | **1.89** | 0.15 U | - | **0.904** | - | **0.297** | **0.433** | 0.15 U | - | **0.282 J** |
| Total Organic Carbon (TOC) (mg/kg) | NA | - | **29000** | - | - | - | 2000 U | - | - | - | **10000 J** | - | 2000 U | - | - | - | 2000 U | - |

***Notes:***

***Bold*** *values indicate a detected concentration.*
*(a) all freshwater values are dry weight normalized*
*-: not analyzed or not available*
**-: LCS and/or LCSD is outside acceptance limits, low biased.*
**1: LCS/LCSD RPD exceeds control limits.*
*bgs: below ground surface*
*ft: feet*
*cPAH-TEQ: carcinogenic Polycyclic Aromatic Hydrocarbons Toxic Equivalent Concentration*
*J: value is an estimate*
*U: not detected, value is the laboratory reporting limit*
*LC: the presence of the analyte is most likely due to laboratory contamination*
*SCO: Sediment Cleanup Objective*
*SMS: Sediment Management Standards*
*mg/kg: milligrams per kilogram*
*NA: No Action level established*

# FIGURES







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MORTON, WASHINGTON

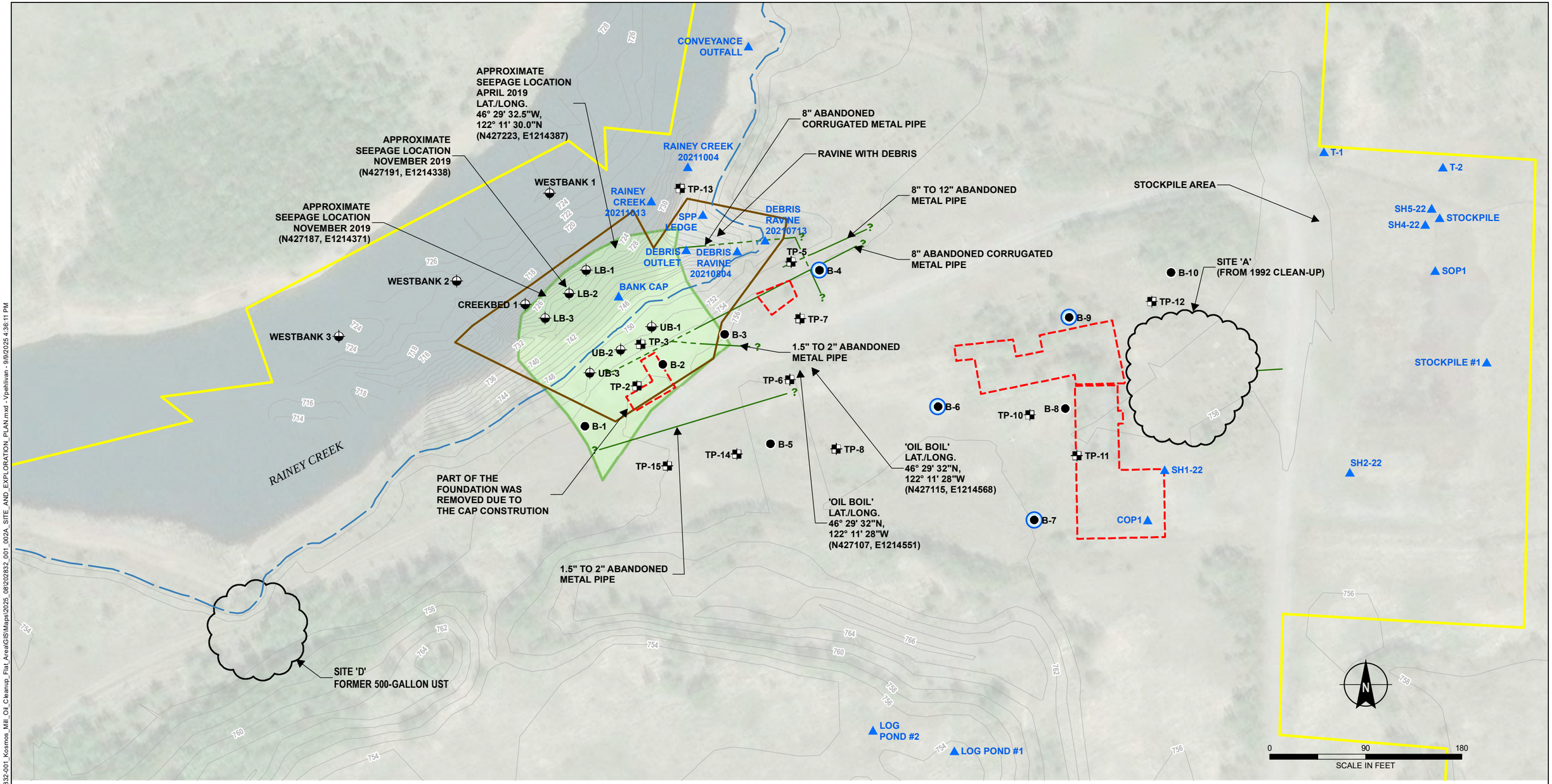
# PROJECT LOCUS

MAP SOURCE: OPEN STREET MAP
SITE COORDINATES: 46°29'33"N, 122°11'26"W

APPROXIMATE SCALE: 1 IN = 4000 FT
AUGUST 2025

FIGURE 1

GIS: \\haleyaldrich.com\share\sea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_0001_VICINITY_MAP.mxd - Vpehlivan - 8/11/2025 4:46:34 PM




**LEGEND**

- SOIL SAMPLE (2019)
- SONIC BORING (2019)
- TEST PIT (2019)
- SURFACE WATER SAMPLE (TACOMA POWER 2020-2022)
- GROUNDWATER SAMPLE (2019)
- CURRENT RESERVOIR'S FULL-POOL OPERATING ELEVATION, AT 749 FEET TCL (753 FEET NAVD 88)
- PIPE ENCOUNTERED, LEFT IN PLACE
- PIPE ENCOUNTERED, REMOVED
- ? UNKNOWN PIPE EXTENT
- AREA OF PROTECTIVE CAP
- APPROXIMATE EXTENT OF EXCAVATION
- OLD/ABANDONED BUILDING SLAB
- APE

**NOTES**

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. APE = AREA OF POTENTIAL EFFECT
3. IRA = INDEPENDENT REMEDIAL ACTION.
4. TOPOGRAPHIC ELEVATION CONTOURS AND SITE FEATURES DATA SOURCE: CITY OF TACOMA PUBLIC UTILITIES (TPU)
5. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
6. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

HALEY ALDRICH

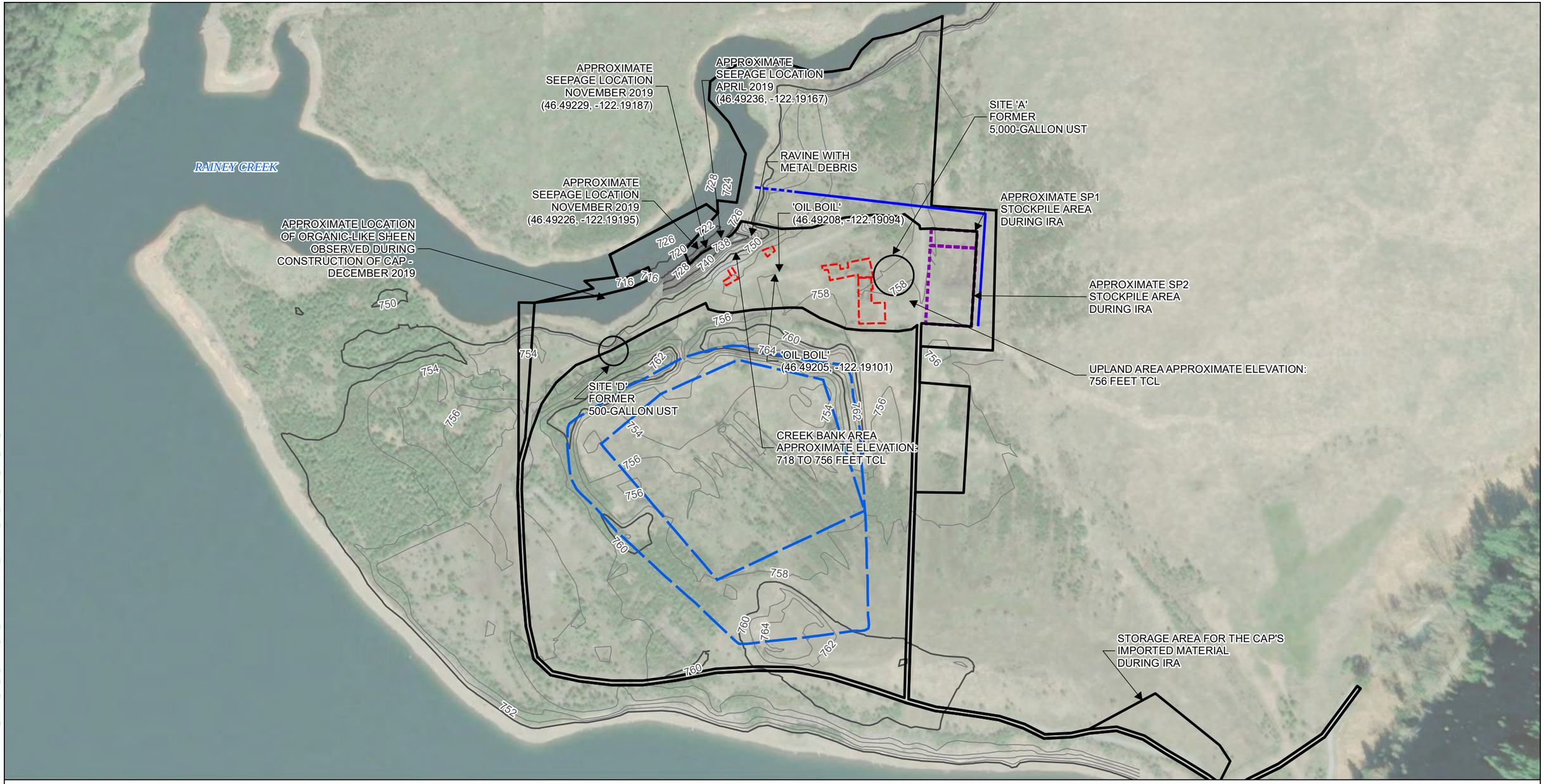
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MORTON, WASHINGTON

# 2019 TO 2022 SITE AND EXPLORATION PLAN

SEPTEMBER 2025

FIGURE 2A

GIS: \\haleyaldrich.com\shared\sea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_002A_SITE_AND_EXPLORATION_PLAN.mxd - Vpehlivan - 9/9/2025 4:36:11 PM




**LEGEND**

- SURFACE WATER DIVERSION TRENCH
- 2019-2020 AREA OF POTENTIAL EFFECT
- APPROXIMATE FORMER STOCKPILE AREA
- APPROXIMATE LOCATION OF FORMER LOG POND
- OLD/ABANDONED BUILDING CONCRETE SLAB

**NOTES**

1. ELEVATION CONTOURS, AERIAL PHOTOGRAPH, AND SITE FEATURES/LOCATIONS PROVIDED BY THE CITY OF TACOMA PUBLIC UTILITIES (TPU).
2. CONTOURS DERIVED FROM AERIAL 'FLYOVER' DONE APRIL 1998 WHEN RESERVOIR WAS AT ELEVATION 746.7 FEET TACOMA CITY LIGHT (TCL) DATUM. CONTOUR INTERVAL IS 2 FEET.
3. FEATURE LOCATIONS ARE APPROXIMATE.
4. THE EMERGENCY INTERIM REMEDIAL ACTION (IRA) BEGAN IN NOVEMBER 2019 AND WAS COMPLETED IN FEBRUARY 2020.
5. UST = UNDERGROUND STORAGE TANK.
6. AERIAL IMAGE SOURCE: ESRI, APRIL 22, 2024

N

0 300 600

SCALE IN FEET

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MORTON, WASHINGTON

# 2019 - 2020 SITE FEATURES

AUGUST 2025

FIGURE 2B

Document Path: \\haleyaldrich.com\share\sea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_002B_2019_2020_SITE_FEATURES.mxd Date: 8/13/2025 User Name: Vpehlivan

PETROLEUM-IMPACTED MATERIAL OBSERVED BY TPU DURING PROTECTIVE CAP CONSTRUCTION

SOLIDIFIED PETROLEUM PRODUCT LEDGE (46.49243, 122.19147)

SOLIDIFIED PETROLEUM PRODUCT IN RAVINE (46.44238, 122.19113)

APPROXIMATE SP1 STOCKPILE AREA

APPROXIMATE SP2 STOCKPILE AREA

SITE 'A' FORMER 5,000-GALLON UST

SITE 'D' FORMER 500-GALLON UST

SS-1 SS-2 SS-3 SS-4 SS-5 SS-6 SS-7 SS-7-R SS-7A SS-8 SS-9 SS-10 SS-11 SS-12

SW-1 SW-2 SW-3

TP-16 TP-17 TP-18 TP-19 TP-20 TP-21 TP-22 TP-23 TP-24 TP-25 TP-26 TP-27 TP-28 TP-29 TP-30 TP-31 TP-32 TP-33 TP-34 TP-35 TP-36 TP-36B TP-37 TP-38 TP-39 TP-40 TP-41 TP-42 TP-43 TP-44 TP-45 TP-46 TP-47 TP-48 TP-49 TP-50 TP-51 TP-52 TP-53 TP-54 TP-55 TP-56 TP-57 TP-58 TP-59 TP-60 TP-61

B-11 B-12 B-13 B-14 B-15 B-16 B-17

MW-1D MW-1S MW-2D MW-2S MW-3D MW-3S MW-4D MW-4S

SH1-22 SH2-22 SH4-22 SH5-22

A A' B B'

0 80 160
SCALE IN FEET

N

## LEGEND

- MONITORING WELL (2022)
- BORING WITH GROUNDWATER SAMPLE (2022)
- TEST PIT (2022)
- SEDIMENT SAMPLE (2022)
- WATER SAMPLE (2022)
- CROSS SECTION
- SONIC BORING (2019)
- SOIL SAMPLE (2019)
- TEST PIT (2019)
- GROUNDWATER SAMPLE (2022)
- CURRENT RESERVOIR'S FULL-POOL OPERATING ELEVATION, 749 FEET TCL
- PIPE ENCOUNTERED, LEFT IN PLACE
- PIPE ENCOUNTERED, REMOVED
- TOPOGRAPHIC ELEVATION CONTOUR, 2-FT INTERVAL
- GPR AREA
- VISUAL INSPECTION AREA
- AREA OF PROTECTIVE CAP
- EXTENT OF IRA EXCAVATION
- FORMER STOCKPILE AREA

## NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. UST = UNDERGROUND STORAGE TANK.
3. IRA = INDEPENDENT REMEDIAL ACTION.
4. GPR = GROUND PENETRATION RADAR
5. TOPOGRAPHIC ELEVATION CONTOURS AND SITE FEATURES DATA SOURCE: TPU
6. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
7. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

HALEY ALDRICH

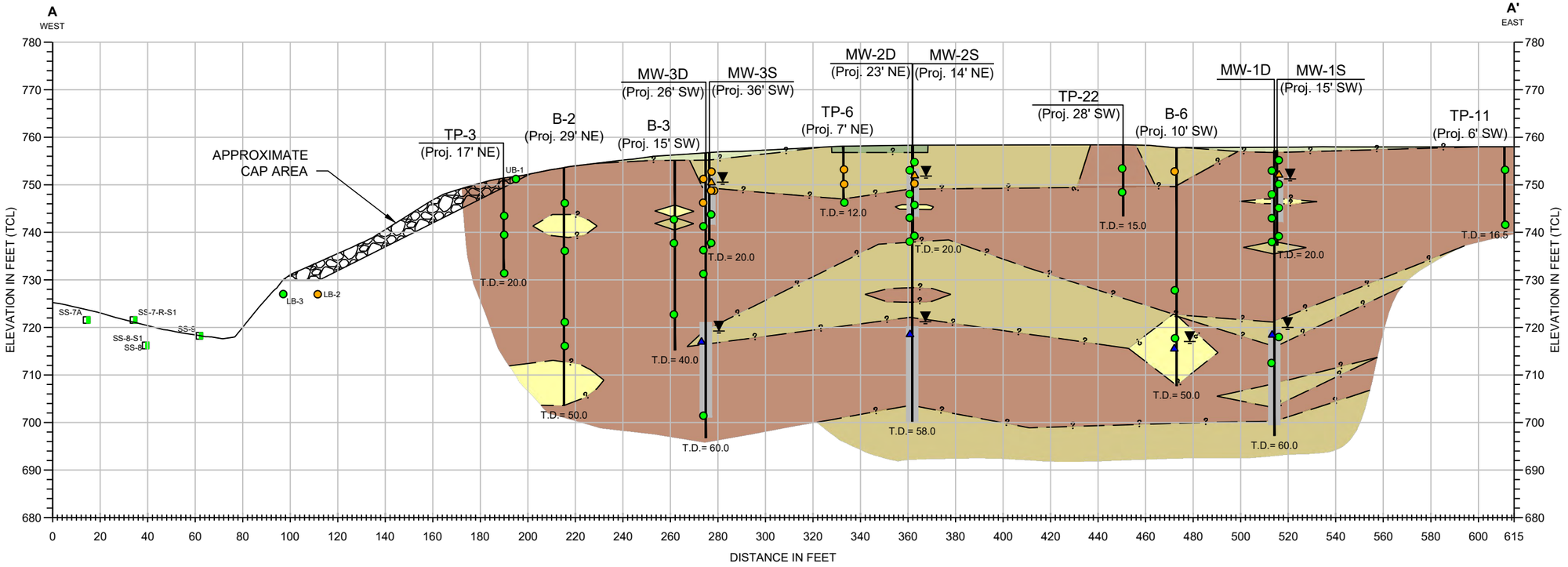
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# REMEDIAL INVESTIGATION SITE AND EXPLORATION PLAN

SEPTEMBER 2025

FIGURE 3

GIS: \\haleyaldrich.com\shareisea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_0003_REMEDIAL_INVESTIGATION_SITE_AND_EXPLORATION_PLAN.mxd - Vpehlivan - 9/9/2025 4:34:16 PM




**LEGEND**

BORING NAME WITH OFFSET — B-1 (Proj. 92' S)

BORING LOCATION

22 — WATER LEVEL

SCREEN INTERVAL

T.D.= 60.0

- TOP SOIL
- SILTY/CLAYEY SAND AND SILTY/CLAYEY GRAVEL
- SILT AND/OR CLAY WITH OR WITHOUT SAND
- CLEAN SAND AND/OR GRAVEL

- WATER SAMPLE - BELOW APPLICABLE SCREENING LEVELS
- SOIL SAMPLE - BELOW APPLICABLE SCREENING LEVELS
- SS-8 SEDIMENT SAMPLE - BELOW APPLICABLE SCREENING LEVELS
- SAMPLE ABOVE APPLICABLE SCREENING LEVELS

**NOTES**

1. THIS SUBSURFACE PROFILE IS GENERALIZED FROM MATERIALS OBSERVED IN SOIL BORINGS AND TEST PITS ADVANCED DURING THE 2019 SITE INVESTIGATION AND 2022 REMEDIAL INVESTIGATION. VARIATIONS MAY EXIST BETWEEN PROFILE AND ACTUAL CONDITIONS.
2. DECEMBER 2019 AND FEBRUARY 2022 GROUNDWATER DATA SHOWN.

HORIZ. 0 50 100
VERT. 0 25 50
SCALE IN FEET

HALEY ALDRICH

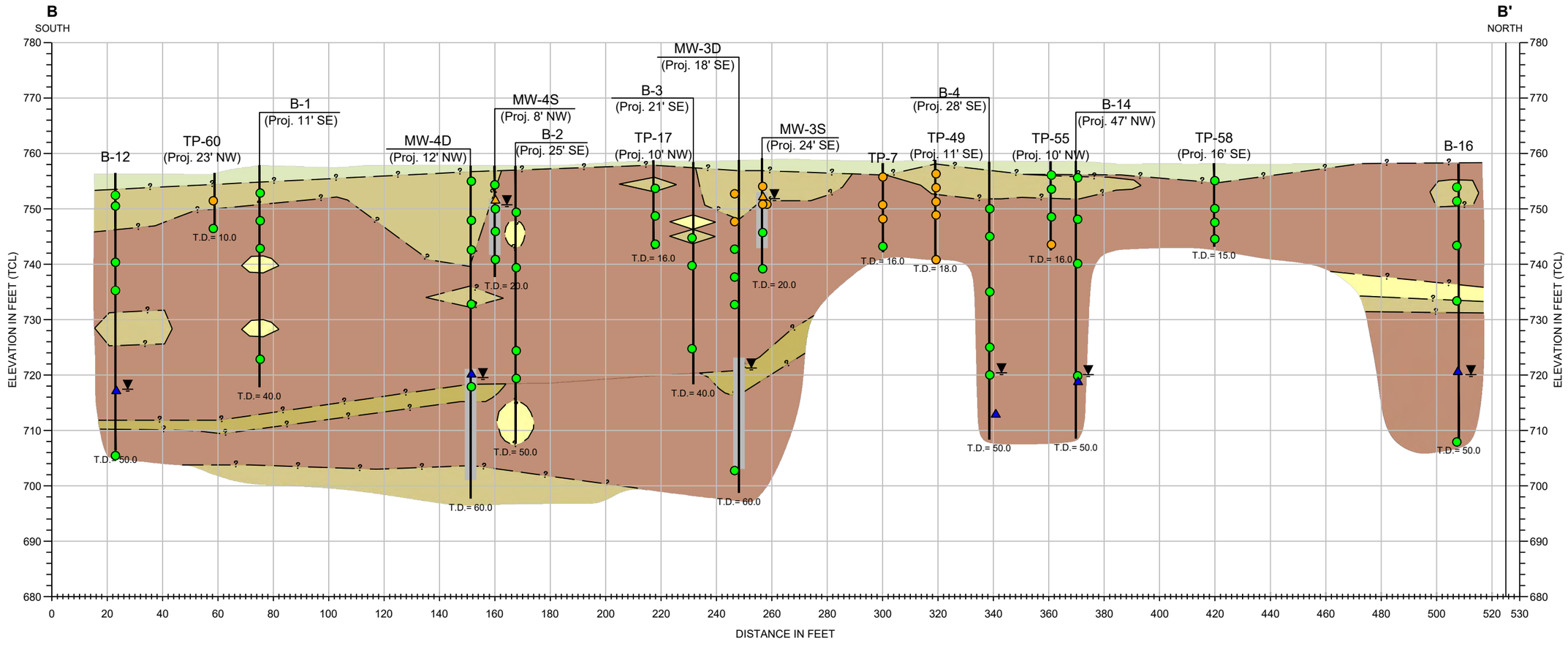
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CROSS SECTION A-A'

AUGUST 2025

FIGURE 4

\\HALEYALDRICH.COM\SHARE\SEA_PROJECTS\NOTEBOOKS\202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\CAD\202832_001_0002_CROSS_SECTIONS_JUNE2024.DWG
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**LEGEND**

BORING NAME WITH OFFSET — B-1 (Proj. 92' S)

BORING LOCATION

22 — WATER LEVEL

SCREEN INTERVAL

T.D.= 60.0

- TOP SOIL
- SILTY/CLAYEY SAND AND SILTY/CLAYEY GRAVEL
- SILT AND/OR CLAY WITH OR WITHOUT SAND
- CLEAN SAND AND/OR GRAVEL

- WATER SAMPLE - BELOW APPLICABLE SCREENING LEVELS
- SOIL SAMPLE - BELOW APPLICABLE SCREENING LEVELS
- SAMPLE ABOVE APPLICABLE SCREENING LEVELS

**NOTES**

1. THIS SUBSURFACE PROFILE IS GENERALIZED FROM MATERIALS OBSERVED IN SOIL BORINGS AND TEST PITS ADVANCED DURING THE 2019 SITE INVESTIGATION AND 2022 REMEDIAL INVESTIGATION. VARIATIONS MAY EXIST BETWEEN PROFILE AND ACTUAL CONDITIONS.
2. DECEMBER 2019 AND FEBRUARY 2022 GROUNDWATER DATA SHOWN.

HORIZ. 0 40 870
VERT. 0 20 40
SCALE IN FEET

HALEY ALDRICH

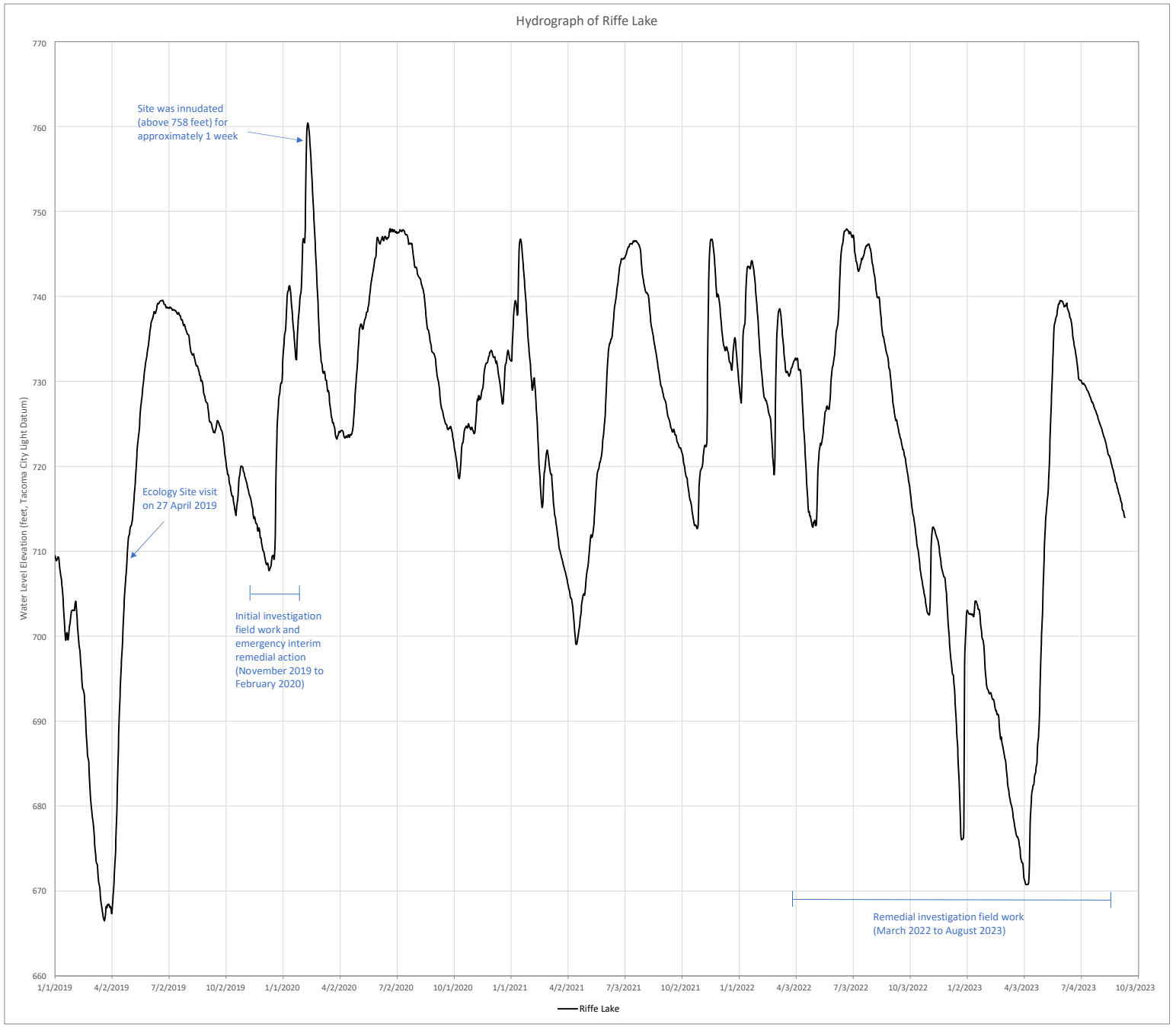
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CROSS SECTION B-B'

AUGUST 2025

FIGURE 5

\\HALEYALDRICH.COM\SHARE\SEA_PROJECTS\NOTEBOOKS\0202832-001 KOSMOS MILL OIL CLEANUP FLAT AREA\CAD\202832_001_0002_CROSS_SECTIONS_JUNE2024.DWG Printed: 8/13/2025 4:37 PM Sheet: SECTION B
MSCHWEITZER




Notes:
1. Riffe Lake levels downloaded from United States Geological Survey station 14234800 from January 2019 to current (through September 2023).

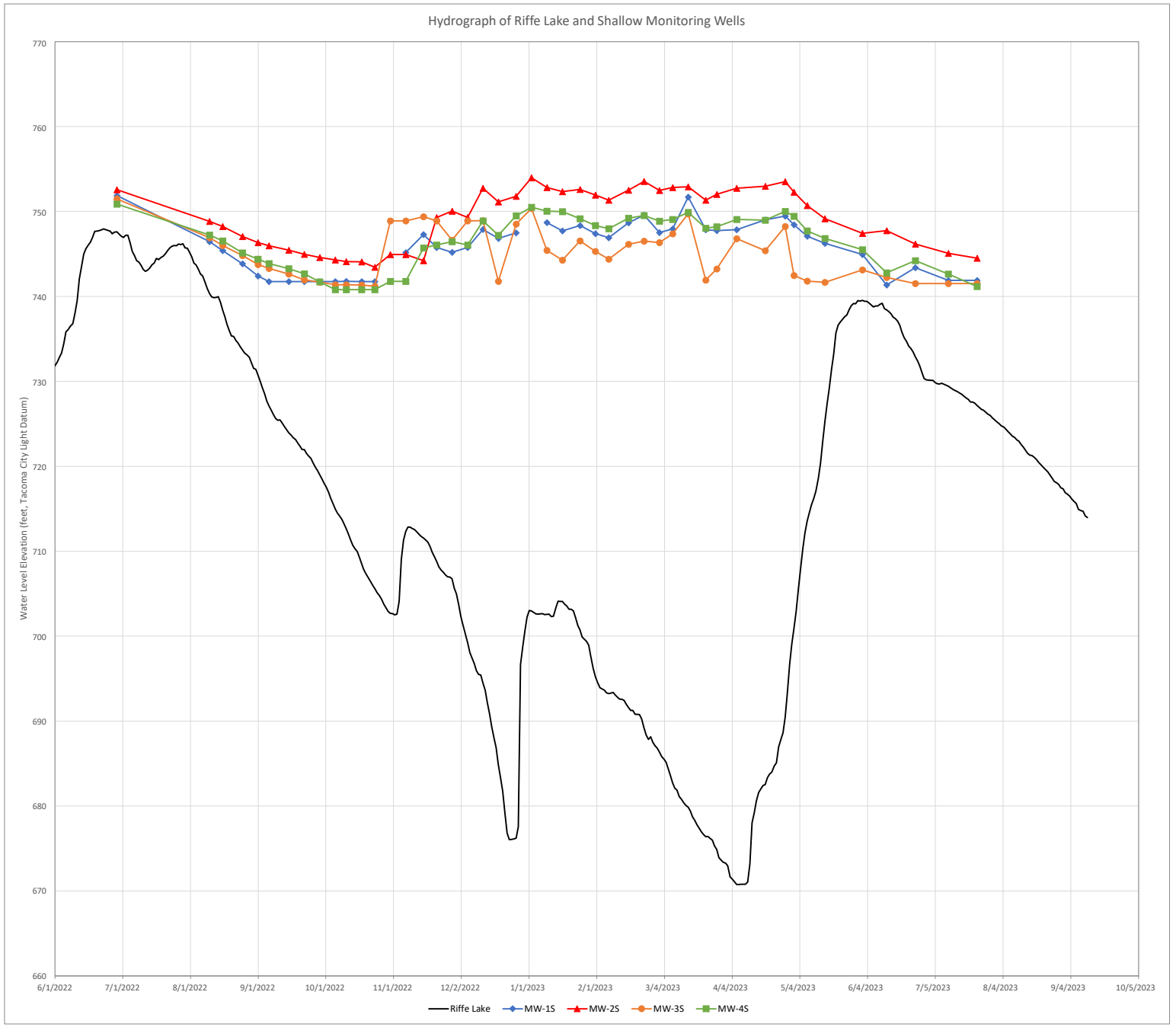
Kosmos Mill
Morton, WASHINGTON

HYDROGRAPH -
RIFFE LAKE
NOVEMBER 2023

HALEY ALDRICH

Figure
6

\\haleyaldrich.com\shared\ea_projects\Notebooks\0202823\2-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\Workspace\RI Report




Notes:
1. Riffe Lake levels downloaded from United States Geological Survey station 14234800 from January 2019 to current (through September 2023).

2. Water levels measured from the shallow monitoring wells from August 2022 to July 2023.

Kosmos Mill
Morton, WASHINGTON

HYDROGRAPH -
SHALLOW MONITORING WELLS
NOVEMBER 2023

HALEY ALDRICH

Figure
7A

\\haleyaldrich.com\shared\ea_projects\Notebooks\0202823\0201_Kosmos_Mill_Oil_Cleanup_Flat_Area\Workspace\RI Report




\\haleyaldrich.com\shareiess_projects\Notebooks\202282-001_Kosmos_Mill_OU_Cleanup_Plat_Area\Workspace\RI Report

Notes:
1. Riffe Lake levels downloaded from United States Geological Survey station 14234800 from January 2019 to current (through September 2023).

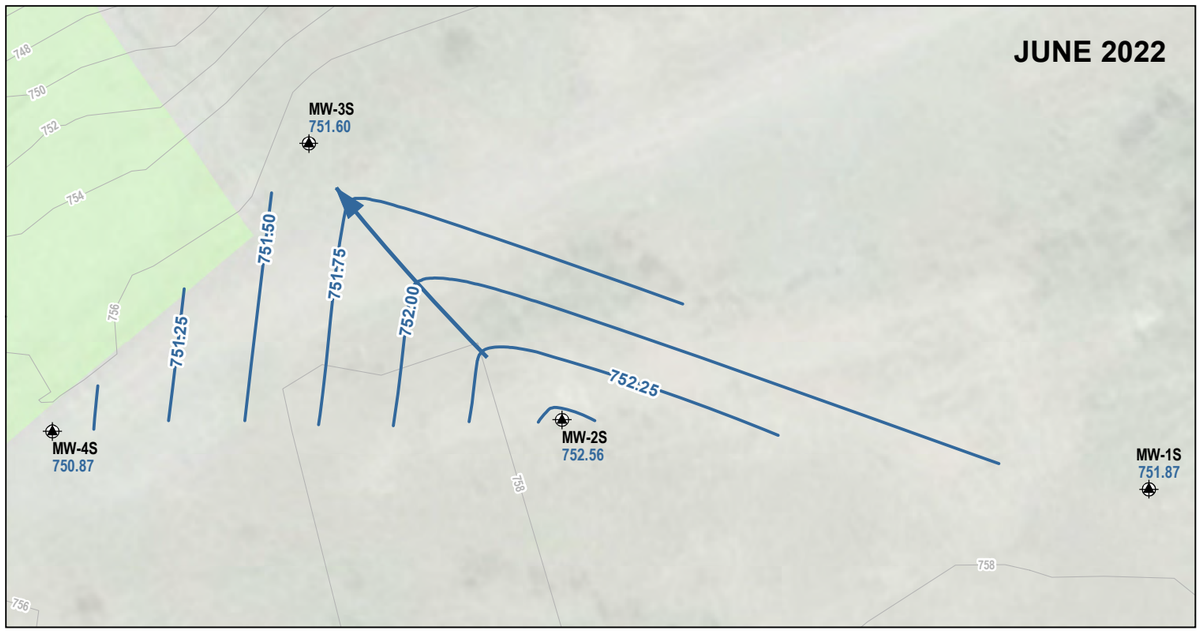
2. Water levels measured from the deep monitoring wells from November 2022 to August 2023.

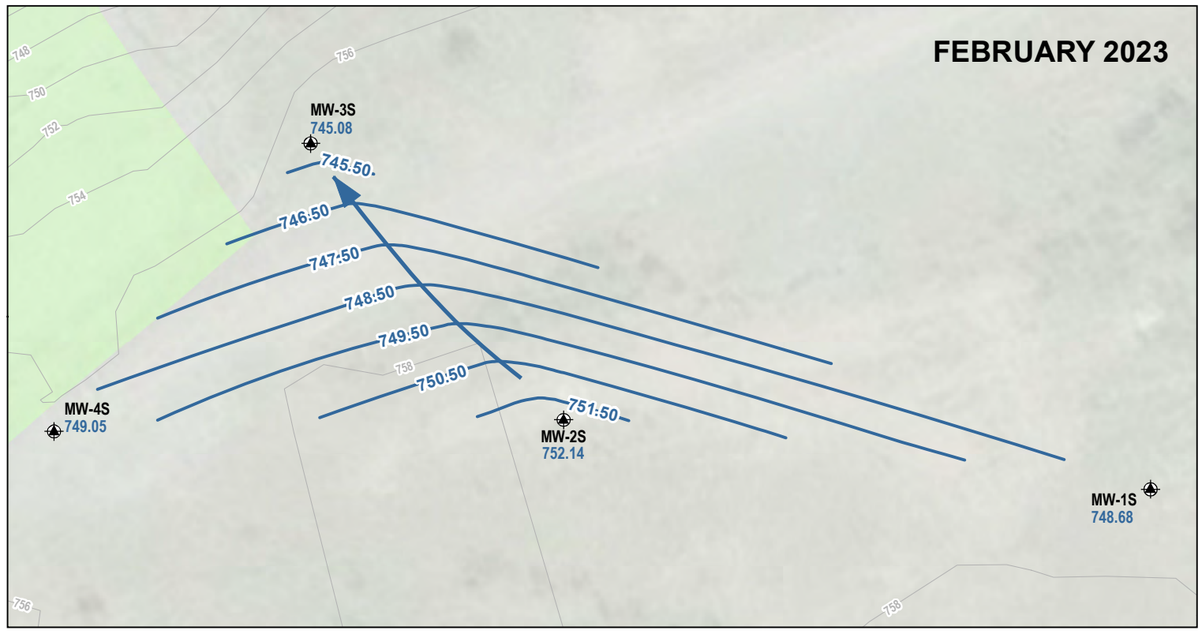
Kosmos Mill
Morton, WASHINGTON

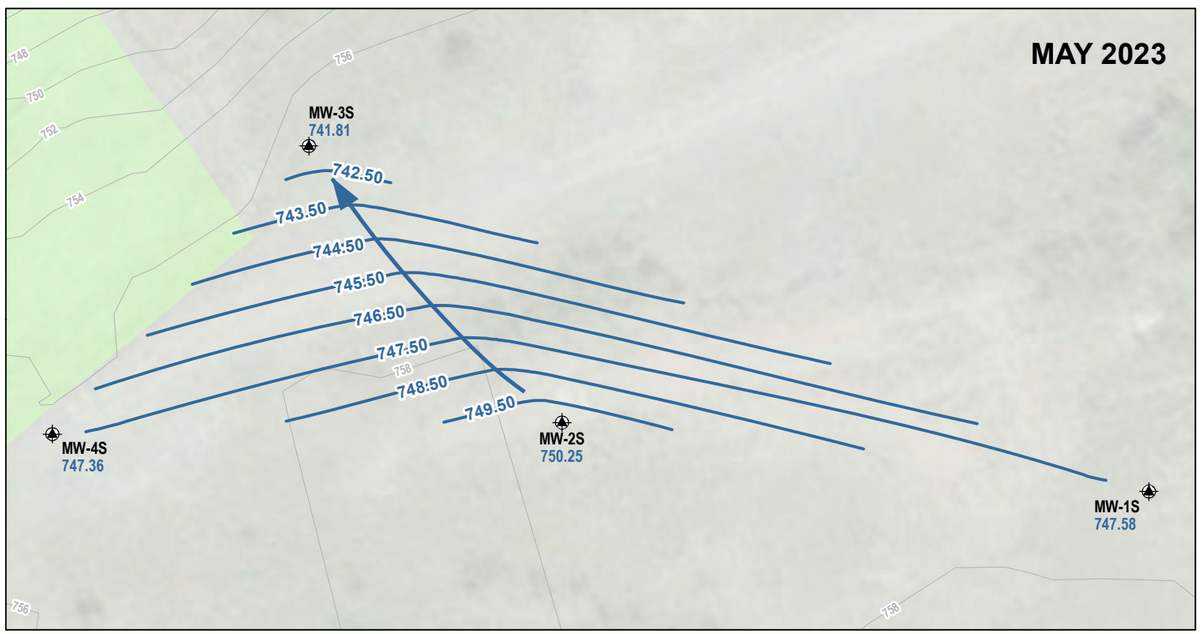
HYDROGRAPH -
DEEP MONITORING WELLS
NOVEMBER 2023

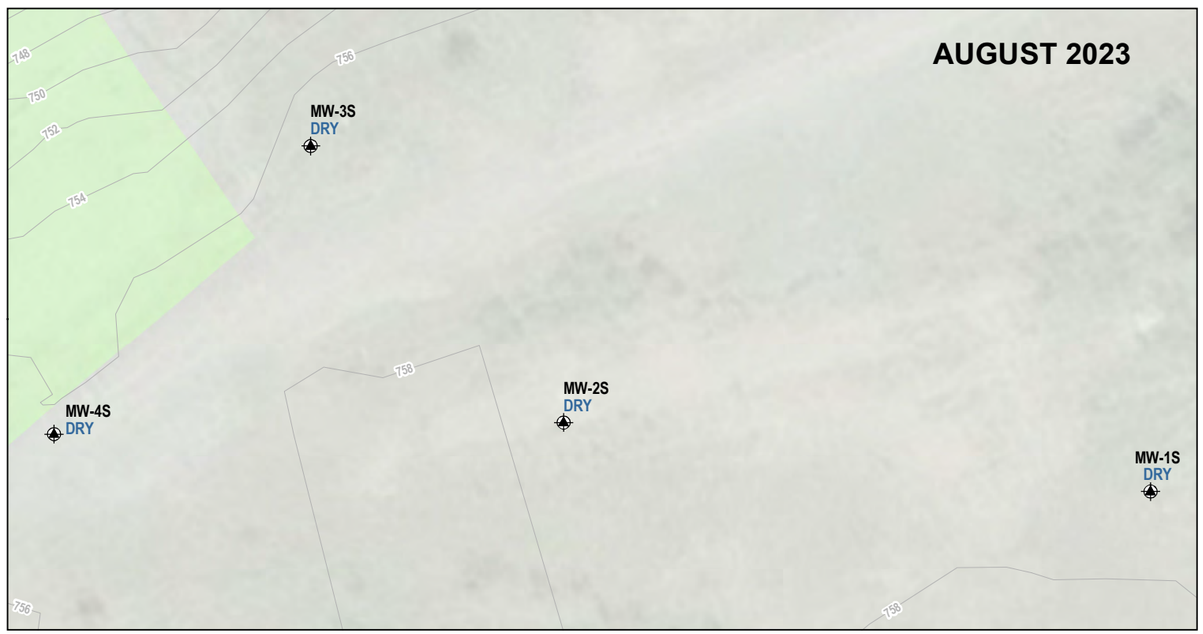
HALEY ALDRICH

Figure
7B




**LEGEND**

- MONITORING WELL WITH ID AND **GROUNDWATER ELEVATION** INDICATED IN FEET (TCL)
- INTERPRETED SHALLOW GROUNDWATER ELEVATION CONTOUR, 1.0-FOOT INTERVAL (JUNE 2022 IS 0.25-FOOT INTERVAL)
- INTERPRETED GROUNDWATER FLOW DIRECTION
- TOPOGRAPHIC ELEVATION CONTOUR, 2-FOOT INTERVAL
- AREA OF PROTECTIVE CAP

**NOTES**

1. THE WELLS ON THIS MAP ARE ALL SCREENED IN THE SHALLOW AQUIFER. THEIR GROUNDWATER ELEVATIONS WERE USED TO INTERPRET GROUNDWATER FLOW DIRECTION.
2. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
3. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
4. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

N

0 40 80
SCALE IN FEET

HALEY ALDRICH

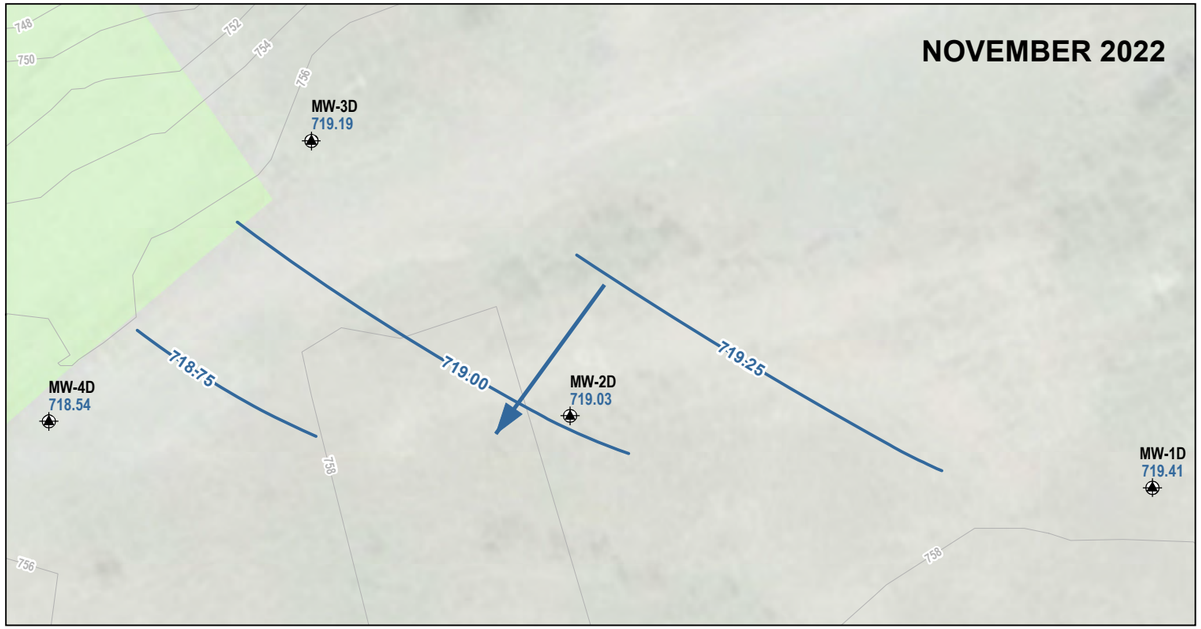
KOSMOS MILL
MORTON, WASHINGTON

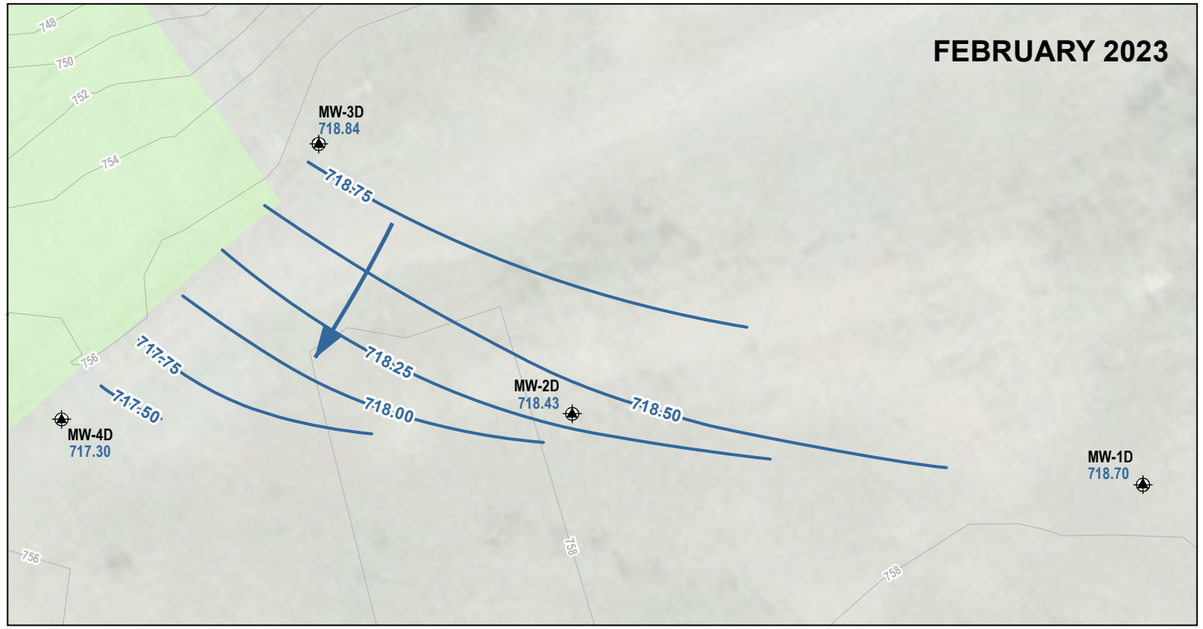
# GROUNDWATER CONTOURS SHALLOW MONITORING WELLS

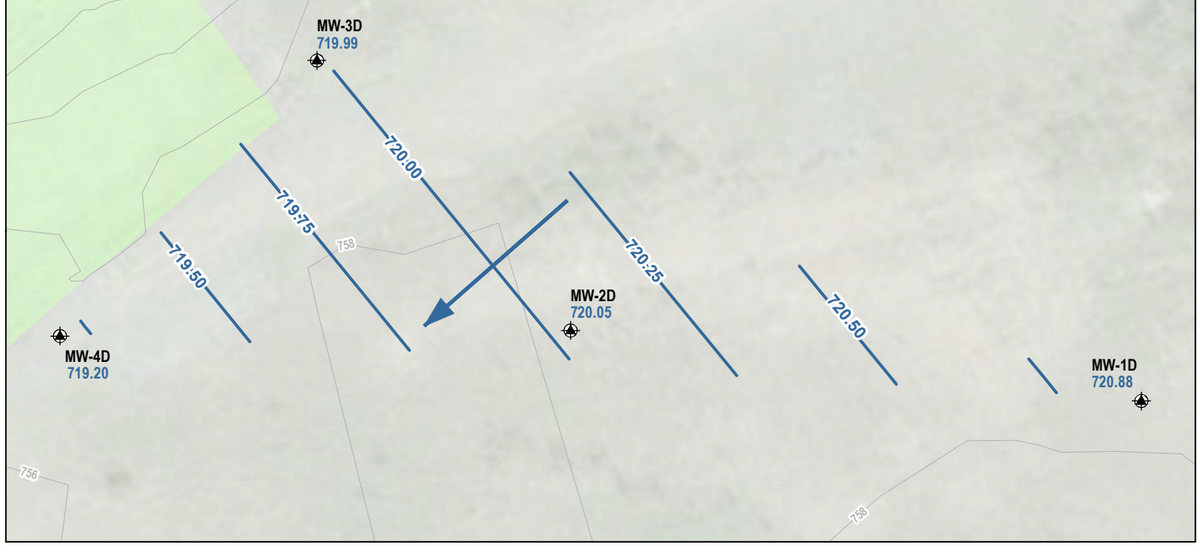
AUGUST 2025

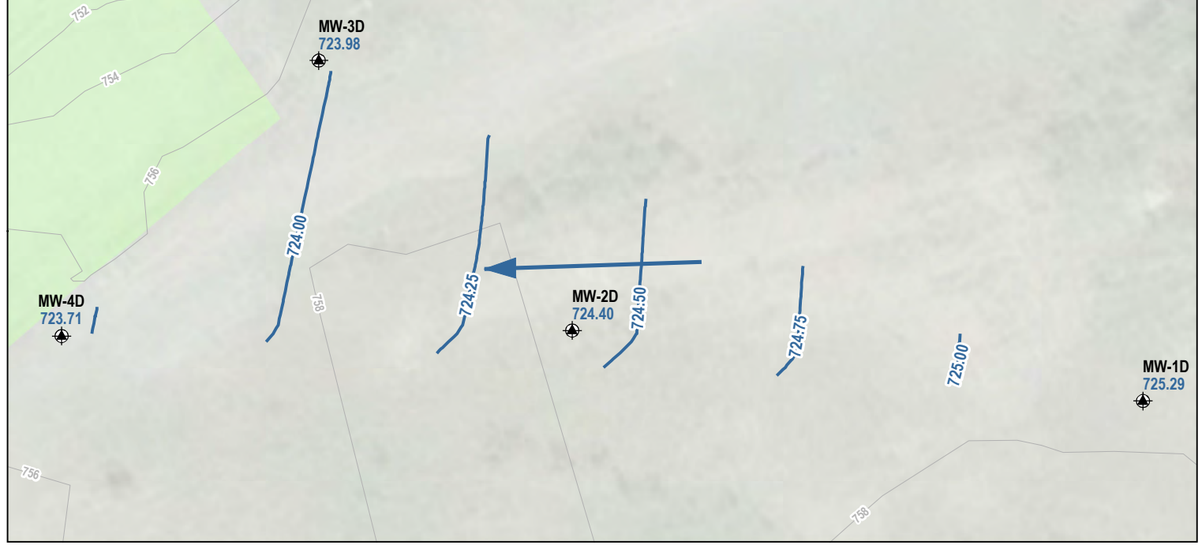
FIGURE 8

GIS: \\haleyaldrich.com\shared\sea_projects\Notebooks\0202832-001_Kosmos_Mill_OI_Cleanup_Fiat_Area\GIS\Maps\2025_08\202832_001_0008_SHALLOW_GROUNDWATER_CONTOURS.mxd - Vpehlivan - 8/11/2025 5:39:48 PM




**LEGEND**

- MONITORING WELL WITH ID AND **GROUNDWATER ELEVATION** INDICATED IN FEET (TCL)
- INTERPRETED SHALLOW GROUNDWATER ELEVATION CONTOUR, 0.25-FOOT INTERVAL
- INTERPRETED GROUNDWATER FLOW DIRECTION
- TOPOGRAPHIC ELEVATION CONTOUR, 2-FOOT INTERVAL
- AREA OF PROTECTIVE CAP

**NOTES**

1. THE WELLS ON THIS MAP ARE ALL SCREENED IN THE DEEP AQUIFER. THEIR GROUNDWATER ELEVATIONS WERE USED TO INTERPRET GROUNDWATER FLOW DIRECTION.
2. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
3. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
4. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

N

0 40 80

SCALE IN FEET

HALEY ALDRICH

KOSMOS MILL
MORTON, WASHINGTON

# GROUNDWATER CONTOURS DEEP MONITORING WELLS

AUGUST 2025

FIGURE 9

GIS: \\haleyaldrich.com\shareitsea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_0009_DEEP_GROUNDWATER_CONTOURS.mxd - Vpehlivan - 8/21/2025 11:35:35 AM

| B-11 | 4 - 6 (ft) Saturated | 12.5 - 15 (ft) Saturated | 32.5 - 35 (ft) Saturated | 47.5 - 50 (ft) Saturated |
|---|---|---|---|---|
| TPH | < 250/92 | < 250 | < 250 | < 250 |

| TP-43 | 5 - 7.5 (ft) Saturated | 5 - 7.5 (ft) Saturated | 7.5 - 10 (ft) Saturated | 12 - 14 (ft) Saturated |
|---|---|---|---|---|
| TPH | 1440 J | < 250 J | 1220 J/< 250 J | 6330 |

| TP-49 | 2 - 2.5 (ft) Vadose | 4 - 5 (ft) Vadose | 7 - 7.5 (ft) Saturated | 9 - 10 (ft) Saturated | 17 - 18 (ft) Saturated |
|---|---|---|---|---|---|
| TPH | 4373 | 482 | 4500 | 2680 | 280 |

| TP-42 | 2.5 - 3.5 (ft) Saturated | 4 - 5 (ft) Saturated | 8 - 10 (ft) Saturated |
|---|---|---|---|
| TPH | 7900 | 13011 | 26 |

| TP-44 | 2.5 - 5 (ft) Saturated | 7.5 - 10 (ft) Saturated | 12.5 - 15 (ft) Saturated |
|---|---|---|---|
| TPH | 10830 | 13600 | < 250 |

| TP-48 | 2.5 - 5 (ft) Saturated | 7.5 - 10 (ft) Saturated | 12.5 - 15 (ft) Saturated |
|---|---|---|---|
| TPH | 2910/< 250 | 1010 J/26 J | < 250 |

| TP-50 | 2.5 - 5 (ft) Saturated | 7.5 - 10 (ft) Saturated |
|---|---|---|
| TPH | < 250 | 62 |

| TP-51 | 2.5 - 5 (ft) Saturated | 7.5 - 10 (ft) Saturated | 12.5 - 15 (ft) Saturated |
|---|---|---|---|
| TPH | 2740/2185 | < 250 | < 250 |

| TP-58 | 0 - 2.5 (ft) Vadose | 2.5 - 5 (ft) Vadose | 5 - 10 (ft) Saturated | 10 - 13 (ft) Saturated |
|---|---|---|---|---|
| TPH | < 250 | < 250 | < 250 | 68 |

| TP-55 | 2.5 - 3.5 (ft) Vadose | 4 - 5 (ft) Vadose | 10 - 12.5 (ft) Saturated | 14 - 16 (ft) Saturated |
|---|---|---|---|---|
| TPH | 44 | < 250 | < 250 | 352 |

| TP-21 | 2.5 - 5 (ft) Vadose | 7.5 - 10 (ft) Saturated | 12.5 - 15 (ft) Saturated |
|---|---|---|---|
| TPH | 35 | 168.3/< 250 | 10 |

| TP-36 | 0 - 3.5 (ft) Vadose | 9 - 10 (ft) Saturated |
|---|---|---|
| TPH | 1090 | < 250 |

| TP-34 | 1.5 - 2.5 (ft) Vadose | 5 - 6 (ft) Vadose |
|---|---|---|
| TPH | 5200 | < 250 |

| TP-59 | 4.5 - 5.5 (ft) Saturated | 9 - 11 (ft) Saturated | 15 - 17 (ft) Saturated |
|---|---|---|---|
| TPH | 1439 | 3660 | 1880 |

| TP-24 | 0 - 2.5 (ft) Vadose | 2.5 - 5 (ft) Vadose | 7.5 - 10 (ft) Saturated |
|---|---|---|---|
| TPH | 3390/2790 | 711.8 | < 250 |

| B-13 | 1 - 3 (ft) Vadose | 10 - 11 (ft) Saturated | 17.5 - 20 (ft) Saturated | 47.5 - 50 (ft) Saturated |
|---|---|---|---|---|
| TPH | 800 | < 250 | < 250 | < 250 |

| MW-3S | 3 - 3.8 (ft) Vadose | 7 - 7.8 (ft) Saturated | 12 - 12.8 (ft) Saturated | 18 - 18.8 (ft) Saturated |
|---|---|---|---|---|
| TPH | 682 | 326/1150 | < 250 | < 250 |

| MW-3D | 2.5 - 5 (ft) Vadose | 7.5 - 10 (ft) Saturated | 12.5 - 15 (ft) Saturated | 17.5 - 20 (ft) Saturated | 22.5 - 25 (ft) Saturated | 52.5 - 55 (ft) Saturated |
|---|---|---|---|---|---|---|
| TPH | 690 | 810 | < 250 | < 250 | < 250 | < 250 |

| TP-20 | 2.5 - 5 (ft) Vadose | 7.5 - 10 (ft) Saturated |
|---|---|---|
| TPH | 1310 | < 250 |

| TP-29 | 5 - 6 (ft) Vadose | 10 - 11 (ft) Saturated |
|---|---|---|
| TPH | 94.5 | < 250 |

| MW-1S | 2 - 2.8 (ft) Vadose | 7 - 7.8 (ft) Saturated | 12 - 12.8 (ft) Saturated | 18 - 18.8 (ft) Saturated |
|---|---|---|---|---|
| TPH | 9.1 | < 250 | < 250 | < 250 |

SITE 'A'
FORMER 5,000-GALLON UST

SITE 'D'
FORMER 500-GALLON UST

0 80 160
SCALE IN FEET

## LEGEND

- MONITORING WELL (2022)
- BORING WITH GROUNDWATER SAMPLE (2022)
- TEST PIT (2022)
- SEDIMENT SAMPLE (2022)
- WATER SAMPLE (2022)
- SONIC BORING (2019)
- SOIL SAMPLE (2019)
- TEST PIT (2019)
- CURRENT RESERVOIR'S FULL-POOL OPERATING ELEVATION, 749 FEET TCL
- PIPE ENCOUNTERED, LEFT IN PLACE
- PIPE ENCOUNTERED, REMOVED
- TOPOGRAPHIC ELEVATION CONTOUR, 2-FT INTERVAL
- AREA OF PROTECTIVE CAP
- EXTENT OF IRA EXCAVATION
- FORMER STOCKPILE AREA

**NOTES**
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. BLUE SHADING INDICATES CONCENTRATIONS EXCEED THE APPLICABLE SCREENING LEVELS.
3. DEFINITIONS:
   < = NOT DETECTED, VALUE IS THE LABORATORY REPORTING LIMIT
   / = VALUE FOLLOWING THE FORWARD SLASH IS THE FIELD DUPLICATES RESULT
   J = VALUE IS AN ESTIMATE
   TPH = SUM OF GASOLINE RANGE, DIESEL RANGE AND OIL RANGE TOTAL PETROLEUM HYDROCARBON
4. CONCENTRATIONS IN mg/kg (MILLIGRAMS PER KILOGRAM)
5. ONLY DATA COLLECTED DURING THE 2022-2023 RI IS PRESENTED
6. GREEN SYMBOLS INDICATES TPH IS NOT DETECTED OR DETECTED BELOW SITE-SPECIFIC MTCA METHOD B SCREENING LEVELS ORANGE SYMBOLS INDICATES TPH DETECTED ABOVE SITE-SPECIFIC MTCA METHOD B SCREENING LEVEL WHEN MIXED-RANGE HYDROCARBONS ARE THE PRIMARY CONSTITUENT. PURPLE INDICATES TPH DETECTED ABOVE THE SITE-SPECIFIC MTCA METHOD B SCREENING LEVEL WHEN GASOLINE-RANGE HYDROCARBONS ARE THE PRIMARY CONSTITUENT.
7. IRA = INDEPENDENT REMEDIAL ACTION
8. TOPOGRAPHIC ELEVATION CONTOURS AND SITE FEATURES DATA SOURCE: TPU
9. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
10. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

HALEY ALDRICH

KOSMOS MILL
MORTON, WASHINGTON

# TPH DETECTIONS IN SOIL

SEPTEMBER 2025

FIGURE 10

GIS: \\haleyaldrich.com\share\sea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\0202832_001_0010_TPH_DETECTIONS_IN_SOIL.mxd - Vpehlivan - 9/11/2025 4:08:21 PM

| TP-42 | 2.5 - 3.5 (ft) Saturated | 8 - 10 (ft) Saturated |
|---|---|---|
| 1-Methylnaphthalene | < 1 | < 0.002 |
| Benzo(a)pyrene | < 1 | < 0.002 |
| Fluoranthene | < 1 | < 0.002 |
| Pyrene | 2.8 | < 0.002 |
| cPAHs-TEQ | 0.769 | < 0.00151 |

| TP-43 | 5 - 7.5 (ft) Saturated | 7.5 - 10 (ft) Saturated | 12 - 14 (ft) Saturated |
|---|---|---|---|
| 1-Methylnaphthalene | < 0.2 | 0.019/< 0.002 | < 0.2 |
| Benzo(a)pyrene | < 0.2 | < 0.01/< 0.002 | < 0.2 |
| Fluoranthene | < 0.2 | < 0.01/< 0.002 | < 0.2 |
| Pyrene | < 0.2 | 0.027/0.0021 | 0.26 |
| cPAHs-TEQ | < 0.151 | 0.009/< 0.00151 | < 0.151 |

| TP-49 | 4 - 5 (ft) Vadose | 9 - 10 (ft) Saturated | 17 - 18 (ft) Saturated |
|---|---|---|---|
| 1-Methylnaphthalene | 0.036 | 0.56 | 0.13 |
| Benzo(a)pyrene | < 0.002 | < 0.002 | < 0.002 |
| Fluoranthene | < 0.002 | < 0.002 | < 0.002 |
| Pyrene | < 0.002 | < 0.002 | < 0.002 |
| cPAHs-TEQ | < 0.00151 | < 0.00151 | < 0.00151 |

| TP-44 | 7.5 - 10 (ft) Saturated | 12.5 - 15 (ft) Saturated |
|---|---|---|
| 1-Methylnaphthalene | 0.2 | < 0.002 |
| Benzo(a)pyrene | < 0.02 | < 0.002 |
| Fluoranthene | 0.026 | < 0.002 |
| Pyrene | 0.059 | < 0.002 |
| cPAHs-TEQ | 0.015 | < 0.00151 |

| MW-3S | 3 - 3.8 (ft) Vadose | 7 - 7.8 (ft) Saturated | 12 - 12.8 (ft) Saturated |
|---|---|---|---|
| 1-Methylnaphthalene | 0.045 | 0.36 J/1.8 J | < 0.002 |
| Benzo(a)pyrene | 0.0031 | < 0.002/< 0.002 | < 0.002 |
| Fluoranthene | < 0.002 | < 0.002/< 0.002 | < 0.002 |
| Pyrene | 0.051 | 0.038 J/0.11 J | < 0.002 |
| cPAHs-TEQ | 0.005 | 0.002/0.003 | < 0.00151 |

| TP-55 | 2.5 - 3.5 (ft) Vadose | 14 - 16 (ft) Saturated |
|---|---|---|
| 1-Methylnaphthalene | < 0.002 | 0.025 |
| Benzo(a)pyrene | < 0.002 | < 0.002 |
| Fluoranthene | < 0.002 | < 0.002 |
| Pyrene | < 0.002 | < 0.002 |
| cPAHs-TEQ | < 0.00151 | < 0.00151 |

| MW-3D | 2.5 - 5 (ft) Vadose | 7.5 - 10 (ft) Saturated | 12.5 - 15 (ft) Saturated | 17.5 - 20 (ft) Saturated | 22.5 - 25 (ft) Saturated |
|---|---|---|---|---|---|
| 1-Methylnaphthalene | 0.076 | 0.12 | < 0.002 | < 0.002 | < 0.002 |
| Benzo(a)pyrene | < 0.002 | < 0.002 | < 0.002 | < 0.002 | < 0.002 |
| Fluoranthene | 0.008 | 0.0095 J | < 0.002 | < 0.002 | < 0.002 |
| Pyrene | 0.018 | 0.033 | < 0.002 | < 0.002 | < 0.002 |
| cPAHs-TEQ | 0.001586 | 0.001579 | < 0.002 | < 0.002 | < 0.002 |

| TP-59 | 4.5 - 5.5 (ft) Saturated | 9 - 11 (ft) Saturated | 15 - 17 (ft) Saturated |
|---|---|---|---|
| 1-Methylnaphthalene | 0.016 | < 0.002 | 0.54 |
| Benzo(a)pyrene | < 0.002 | < 0.002 | 0.0029 |
| Fluoranthene | 0.0033 | < 0.002 | 0.003 |
| Pyrene | 0.0085 | 0.0096 | 0.0053 |
| cPAHs-TEQ | 0.002 | 0.002 | 0.004 |

| TP-29 | 5 - 6 (ft) Vadose | 10 - 11 (ft) Saturated |
|---|---|---|
| 1-Methylnaphthalene | < 0.002 | < 0.002 |
| Benzo(a)pyrene | 0.0042 | < 0.002 |
| Fluoranthene | < 0.002 | < 0.002 |
| Pyrene | 0.0068 | < 0.002 |
| cPAHs-TEQ | 0.003 | < 0.00151 |

| TP-21 | 7.5 - 10 (ft) Saturated | 12.5 - 15 (ft) Saturated |
|---|---|---|
| 1-Methylnaphthalene | 0.0026 J/0.061 J | < 0.002 |
| Benzo(a)pyrene | < 0.002/< 0.002 | < 0.002 |
| Fluoranthene | < 0.002/< 0.002 | < 0.002 |
| Pyrene | < 0.002/< 0.002 | < 0.002 |
| cPAHs-TEQ | < 0.00151/< 0.00151 | < 0.00151 |

| TP-51 | 2.5 - 5 (ft) Vadose |
|---|---|
| 1-Methylnaphthalene | < 0.002/0.016 |
| Benzo(a)pyrene | < 0.002/< 0.002 |
| Fluoranthene | < 0.002/< 0.002 |
| Pyrene | 0.031/0.029 |
| cPAHs-TEQ | 0.002/< 0.00151 |

| MW-2S | 7 - 7.8 (ft) Saturated | 11 - 11.8 (ft) Saturated |
|---|---|---|
| 1-Methylnaphthalene | 0.0076 | < 0.002 |
| Benzo(a)pyrene | < 0.002 | < 0.002 |
| Fluoranthene | < 0.002 | < 0.002 |
| Pyrene | 0.0028 | < 0.002 |
| cPAHs-TEQ | < 0.00151 | < 0.00151 |

| B-13 | 1 - 3 (ft) Vadose | 10 - 11 (ft) Saturated | 17.5 - 20 (ft) Saturated | 47.5 - 50 (ft) Saturated |
|---|---|---|---|---|
| 1-Methylnaphthalene | < 0.01 | < 0.002 | < 0.002 | < 0.002 |
| Benzo(a)pyrene | 0.027 | < 0.002 | < 0.002 | < 0.002 |
| Fluoranthene | 0.042 | < 0.002 | < 0.002 | < 0.002 |
| Pyrene | 0.049 | < 0.002 | < 0.002 | < 0.002 |
| cPAHs-TEQ | 0.03691 | < 0.002 | < 0.002 | < 0.002 |

SITE 'A'
FORMER 5,000-GALLON UST

SITE 'D'
FORMER 500-GALLON UST

0 80 160
SCALE IN FEET

## LEGEND

- MONITORING WELL (2022)
- BORING WITH GROUNDWATER SAMPLE (2022)
- TEST PIT (2022)
- SEDIMENT SAMPLE (2022)
- WATER SAMPLE (2022)
- SONIC BORING (2019)
- SOIL SAMPLE (2019)
- TEST PIT (2019)
- CURRENT RESERVOIR'S FULL-POOL OPERATING ELEVATION, 749 FEET TCL
- PIPE ENCOUNTERED, LEFT IN PLACE
- PIPE ENCOUNTERED, REMOVED
- TOPOGRAPHIC ELEVATION CONTOUR, 2-FT INTERVAL
- AREA OF PROTECTIVE CAP
- EXTENT OF IRA EXCAVATION
- FORMER STOCKPILE AREA

**NOTES**

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. BLUE SHADING INDICATES CONCENTRATIONS THAT EXCEED APPLICABLE SCREENING LEVELS
3. DEFINITIONS:
   < = NOT DETECTED, VALUE IS THE LABORATORY REPORTING LIMIT
   J = VALUE IS AN ESTIMATE
   COC = CONTAMINANTS OF CONCERN
4. CONCENTRATIONS IN mg/kg (MILLIGRAMS PER KILOGRAM)
5. ONLY DATA COLLECTED DURING THE 2022-2023 RI IS PRESENTED AND ONLY CHEMICALS CARRIED FORWARD AS COCS ARE SHOWN
6. GREEN SYMBOLS INDICATES PAH COCS ARE NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMITS OR ARE DETECTED BELOW APPLIABLE SCREENING LEVELS. ORANGE SYMBOLS INDICATES PAH COCS ARE DETECTED ABOVE APPLICABLE SCREENING LEVELS
7. IRA = INDEPENDENT REMEDIAL ACTION.
8. GPR = GROUND PENETRATION RADAR
9. TOPOGRAPHIC ELEVATION CONTOURS AND SITE FEATURES DATA SOURCE: TPU
10. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
11. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

HALEY ALDRICH

KOSMOS MILL
MORTON, WASHINGTON

# PAH DETECTIONS IN SOIL

SEPTEMBER 2025

FIGURE 11

GIS: \\haleyaldrich.com\sharelesa_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_0011_PAH_DETECTIONS_IN_SOIL.mxd - Ypehlivan - 9/8/2025 6:17:12 PM

| TP-43 | 5 - 7.5 (ft) Saturated | 7.5 - 10 (ft) Saturated | 12 - 14 (ft) Saturated |
|---|---|---|---|
| Pb | 83.4 | 42.3 J/5.71 J | 15.5 |
| Zn | 1120 J | 597 J/62.9 J | 85.3 |

| TP-24 | 0 - 2.5 (ft) Vadose |
|---|---|
| Pb | 157 J/21.5 J |
| Zn | 218/132 |

SITE 'A'
FORMER 5,000-GALLON UST

SITE 'D'
FORMER 500-GALLON UST

SH5-22
SH4-22

0 80 160
SCALE IN FEET

**LEGEND**

- MONITORING WELL (2022)
- BORING WITH GROUNDWATER SAMPLE (2022)
- TEST PIT (2022)
- SEDIMENT SAMPLE (2022)
- WATER SAMPLE (2022)
- SONIC BORING (2019)
- SOIL SAMPLE (2019)
- TEST PIT (2019)
- CURRENT RESERVOIR'S FULL-POOL OPERATING ELEVATION, 749 FEET TCL
- PIPE ENCOUNTERED, LEFT IN PLACE
- PIPE ENCOUNTERED, REMOVED
- TOPOGRAPHIC ELEVATION CONTOUR, 2-FT INTERVAL
- AREA OF PROTECTIVE CAP
- EXTENT OF IRA EXCAVATION
- FORMER STOCKPILE AREA

**NOTES**
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. BLUE SHADING INDICATES CONCENTRATIONS THAT EXCEED APPLICABLE SCREENING LEVELS
3. DEFINITIONS:
   < = NOT DETECTED, VALUE IS THE LABORATORY REPORTING LIMIT
   J = VALUE IS AN ESTIMATE
   COC = CONTAMINANTS OF CONCERN
4. CONCENTRATIONS IN mg/kg (MILLIGRAMS PER KILOGRAM)
5. ONLY DATA COLLECTED DURING THE 2022-2023 RI IS PRESENTED AND ONLY CHEMICALS CARRIED FORWARD AS COCS ARE SHOWN
6. GREEN SYMBOLS INDICATES METAL COCS ARE NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMITS OR ARE DETECTED BELOW APPLIABLE SCREENING LEVELS. ORANGE SYMBOLS INDICATES METAL COCS ARE DETECTED ABOVE APPLICABLE SCREENING LEVELS
7. IRA = INDEPENDENT REMEDIAL ACTION.
8. GPR = GROUND PENETRATION RADAR
9. TOPOGRAPHIC ELEVATION CONTOURS AND SITE FEATURES DATA SOURCE: TPU
10. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
11. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

HALEY ALDRICH

KOSMOS MILL
MORTON, WASHINGTON

# METAL COC DETECTIONS IN SOIL

SEPTEMBER 2025

FIGURE 12

GIS: \\haleyaldrich.com\shareisea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_0012_METALS_IN_SOIL.mxd - Vpehlivan - 9/11/2025 3:49:41 PM

| MW-3S | 06/29/2022 | 02/13/2023 | 05/11/2023 |
|---|---|---|---|
| TPH-G | 260/260 | 430 | 180 |
| TPH-D | 3300/3200 | 2900 | 1400 |
| TPH-O | 1800/1800 | 1200 | 1600 |

| B-11 | 10/26/2022 |
|---|---|
| TPH-G | < 100 |
| TPH-D | 72 |
| TPH-O | < 250 |

| B-16 | 10/26/2022 |
|---|---|
| TPH-G | < 100 |
| TPH-D | 62 |
| TPH-O | < 250 |

| B-17 | 10/26/2022 |
|---|---|
| TPH-G | < 100 |
| TPH-D | 130 |
| TPH-O | < 250 |

| B-14 | 10/26/2022 |
|---|---|
| TPH-G | < 100 |
| TPH-D | 78 |
| TPH-O | < 250 |

| MW-1S | 06/29/2022 | 02/13/2023 | 05/11/2023 |
|---|---|---|---|
| TPH-G | < 100 | < 100 | < 100 |
| TPH-D | 1500 | 840 | 350 |
| TPH-O | 1700 | 800 | 1000 |

| MW-1D | 11/03/2022 | 02/13/2023 | 05/10/2023 | 08/15/2023 |
|---|---|---|---|---|
| TPH-G | < 100/< 100 | < 100/< 100 | < 100 | < 100 |
| TPH-D | < 50/< 50 | < 50/< 50 | < 60 S | 92 |
| TPH-O | < 250/< 250 | < 250/< 250 | < 300 S | < 250 |

| MW-3D | 11/03/2022 | 02/13/2023 | 05/10/2023 | 08/15/2023 |
|---|---|---|---|---|
| TPH-G | < 100 | < 100 | < 100 | < 100/< 100 |
| TPH-D | < 50 | < 50 | < 50 | 83/57 |
| TPH-O | < 250 | < 250 | < 250 S | < 250/< 250 |

| B-12 | 10/24/2022 |
|---|---|
| TPH-G | < 100 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| B-15 | 10/24/2022 |
|---|---|
| TPH-G | < 100 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| B-13 | 10/25/2022 |
|---|---|
| TPH-G | < 100 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| MW-4D | 11/03/2022 | 02/13/2023 | 05/10/2023 | 08/15/2023 |
|---|---|---|---|---|
| TPH-G | < 100 | < 100 | < 100 | < 100 |
| TPH-D | < 50 | < 50 | < 65 S | 81 |
| TPH-O | < 250 | < 250 | < 320 S | < 250 |

| MW-4S | 06/29/2022 | 02/13/2023 | 05/11/2023 |
|---|---|---|---|
| TPH-G | < 100 | < 100 | < 100 |
| TPH-D | 1000 | 290 | 280 |
| TPH-O | 1000 | < 250 | 620 |

| MW-2D | 11/03/2022 | 02/13/2023 | 05/10/2023 | 08/15/2023 |
|---|---|---|---|---|
| TPH-G | < 100 | < 100 | < 100 | < 100 |
| TPH-D | < 50 | < 50 | < 60 S | 56 |
| TPH-O | < 250 | < 250 | < 300 S | < 250 |

| MW-2S | 06/29/2022 | 02/13/2023 | 05/11/2023 |
|---|---|---|---|
| TPH-G | < 100 | < 100 | < 100/< 100 |
| TPH-D | 1500 | 2700 | 1400/1400 |
| TPH-O | 1100 | 1100 | 1700/1700 |

SITE 'A'
FORMER 5,000-GALLON UST

SITE 'D'
FORMER 500-GALLON UST

0 80 160
SCALE IN FEET

## LEGEND

- MONITORING WELL (2022)
- BORING WITH GROUNDWATER SAMPLE (2022)
- TEST PIT (2022)
- SEDIMENT SAMPLE (2022)
- WATER SAMPLE (2022)
- SONIC BORING (2019)
- SOIL SAMPLE (2019)
- TEST PIT (2019)
- CURRENT RESERVOIR'S FULL-POOL OPERATING ELEVATION, 749 FEET TCL
- PIPE ENCOUNTERED, LEFT IN PLACE
- PIPE ENCOUNTERED, REMOVED
- TOPOGRAPHIC ELEVATION CONTOUR, 2-FT INTERVAL
- AREA OF PROTECTIVE CAP
- EXTENT OF IRA EXCAVATION
- FORMER STOCKPILE AREA

**NOTES**
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. BLUE SHADING INDICATES CONCENTRATIONS THAT EXCEED APPLICABLE SCREENING LEVELS
3. DEFINITIONS:
   < = NOT DETECTED, VALUE IS THE LABORATORY REPORTING LIMIT
   TPH-G = GASOLINE-RANGE TOTAL PETROLEUM HYDROCARBON
   TPH-D = DIESEL-RANGE TOTAL PETROLEUM HYDROCARBON
   TPH-O = OIL-RANGE TOTAL PETROLEUM HYDROCARBON
4. GREEN HALOS INDICATES GROUNDWATER COCS ARE NOT DETECTED OR DETECTED BELOW APPLICABLE SCREENING LEVELS ORANGE HALOS INDICATES GROUNDWATER COCS EXCEEDING APPLICABLE SCREENING LEVELS
5. CONCENTRATIONS IN ug/L (MICROGRAMS PER LITER)
6. ONLY DATA COLLECTED DURING THE 2022-2023 RI IS PRESENTED
7. ONLY TPH-G, TPH-D, AND TPH-O ARE SHOWN IN DATABOXES
8. IRA = INDEPENDENT REMEDIAL ACTION
9. TOPOGRAPHIC ELEVATION CONTOURS AND SITE FEATURES DATA SOURCE: TPU
10. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
11. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

HALEY ALDRICH

KOSMOS MILL
MORTON, WASHINGTON

# GROUNDWATER ANALYTICAL DATA RESULTS

SEPTEMBER 2025

FIGURE 13

GIS: \\haleyaldrich.com\share\sea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_0013_GROUNDWATER_ANALYTICAL_DATA_RESULTS.mxd - Vpehlivan - 9/10/2025 10:05:38 AM

| SS-10 | 0.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | 0.041 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-12 | 0.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | < 0.002 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-11-S1 | 0.5 (ft) |
|---|---|
| B | < 0.0028 J |
| T | < 0.014 J |
| E | < 0.0028 J |
| X | < 0.014 J |
| cPAHs-TEQ | < 0.0040015 |
| TPH-G | < 5.7 |
| TPH-D | < 60 |
| TPH-O | < 60 |

| SS-11 | 0.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | < 0.002 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-1-S1 | 0.5 (ft) |
|---|---|
| B | < 0.0036 J |
| T | < 0.018 J |
| E | < 0.0036 J |
| X | < 0.018 J |
| cPAHs-TEQ | < 0.006493 |
| TPH-G | < 11 |
| TPH-D | < 80 |
| TPH-O | 150 |

| SS-1 | 0.8 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | < 0.002 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-2 | 0.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | < 0.002 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-3 | 0.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | < 0.002 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-7-R-S1 | 0.5 (ft) |
|---|---|
| B | < 0.0026 J |
| T | < 0.013 J |
| E | < 0.0026 J |
| X | < 0.013 J |
| cPAHs-TEQ | < 0.004228 |
| TPH-G | < 11 |
| TPH-D | < 58 |
| TPH-O | 110 |

| SS-7a | 0.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | < 0.002 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-8-S1 | 0.5 (ft) |
|---|---|
| B | < 0.0018 J |
| T | < 0.009 J |
| E | < 0.0018 J |
| X | < 0.009 J |
| cPAHs-TEQ | 0.003728 |
| TPH-G | < 6.8 |
| TPH-D | < 53 |
| TPH-O | < 53 |

| SS-8 | 0.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | 0.0052 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-9 | 0.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | 0.0075 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-4-S1 | 0.5 (ft) |
|---|---|
| B | < 0.0022 J |
| T | < 0.011 J |
| E | < 0.0022 J |
| X | < 0.011 J |
| cPAHs-TEQ | < 0.0040015 |
| TPH-G | < 4.7 |
| TPH-D | < 62 |
| TPH-O | < 62 |

| SS-4 | 1.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | < 0.002 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-6 | 0.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | < 0.002 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

| SS-5 | 0.5 (ft) |
|---|---|
| B | < 0.001 |
| T | < 0.001 |
| E | < 0.001 |
| X | < 0.002 |
| cPAHs-TEQ | < 0.002 |
| TPH-G | < 5 |
| TPH-D | < 50 |
| TPH-O | < 250 |

SITE 'A'
FORMER 5,000-GALLON UST

0 80 160
SCALE IN FEET

**LEGEND**

- MONITORING WELL (2022)
- BORING WITH GROUNDWATER SAMPLE (2022)
- TEST PIT (2022)
- SEDIMENT SAMPLE (2022)
- WATER SAMPLE (2022)
- SONIC BORING (2019)
- SOIL SAMPLE (2019)
- TEST PIT (2019)
- CURRENT RESERVOIR'S FULL-POOL OPERATING ELEVATION, 749 FEET TCL
- PIPE ENCOUNTERED, LEFT IN PLACE
- PIPE ENCOUNTERED, REMOVED
- TOPOGRAPHIC ELEVATION CONTOUR, 2-FT INTERVAL
- AREA OF PROTECTIVE CAP
- EXTENT OF IRA EXCAVATION
- FORMER STOCKPILE AREA

**NOTES**
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. DEFINITIONS:
   cPAH-TEQ: CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS (cPAH) TOXIC EQUIVALENT CONCENTRATION (TEQ)
   B = BENZENE
   T = TOLUENE
   E = ETHYLBENZENE
   X = XYLENE
   < = NOT DETECTED
   TPH-G = GASOLINE-RANGE TOTAL PETROLEUM HYDROCARBON
   TPH-D = DIESEL-RANGE TOTAL PETROLEUM HYDROCABON
   TPH-O = OIL-RANGE TOTAL PETROLEUM HYDROCARBON
   J = VALUE IS AN ESTIMATE
3. GREEN SYMBOLS INDICATE RESULTS ARE NOT DETECTED OR DETECTED BELOW SEDIMENT CLEANUP OBJECTIVE CRITERIA
4. CONCENTRATIONS IN mg/kg (MILLIGRAMS PER KILOGRAM)
5. ONLY DATA COLLECTED DURING THE 2022-2023 RI IS PRESENTED
6. IRA = INDEPENDENT REMEDIAL ACTION.
7. TOPOGRAPHIC ELEVATION CONTOURS AND SITE FEATURES DATA SOURCE: TPU
8. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
9. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

HALEY ALDRICH

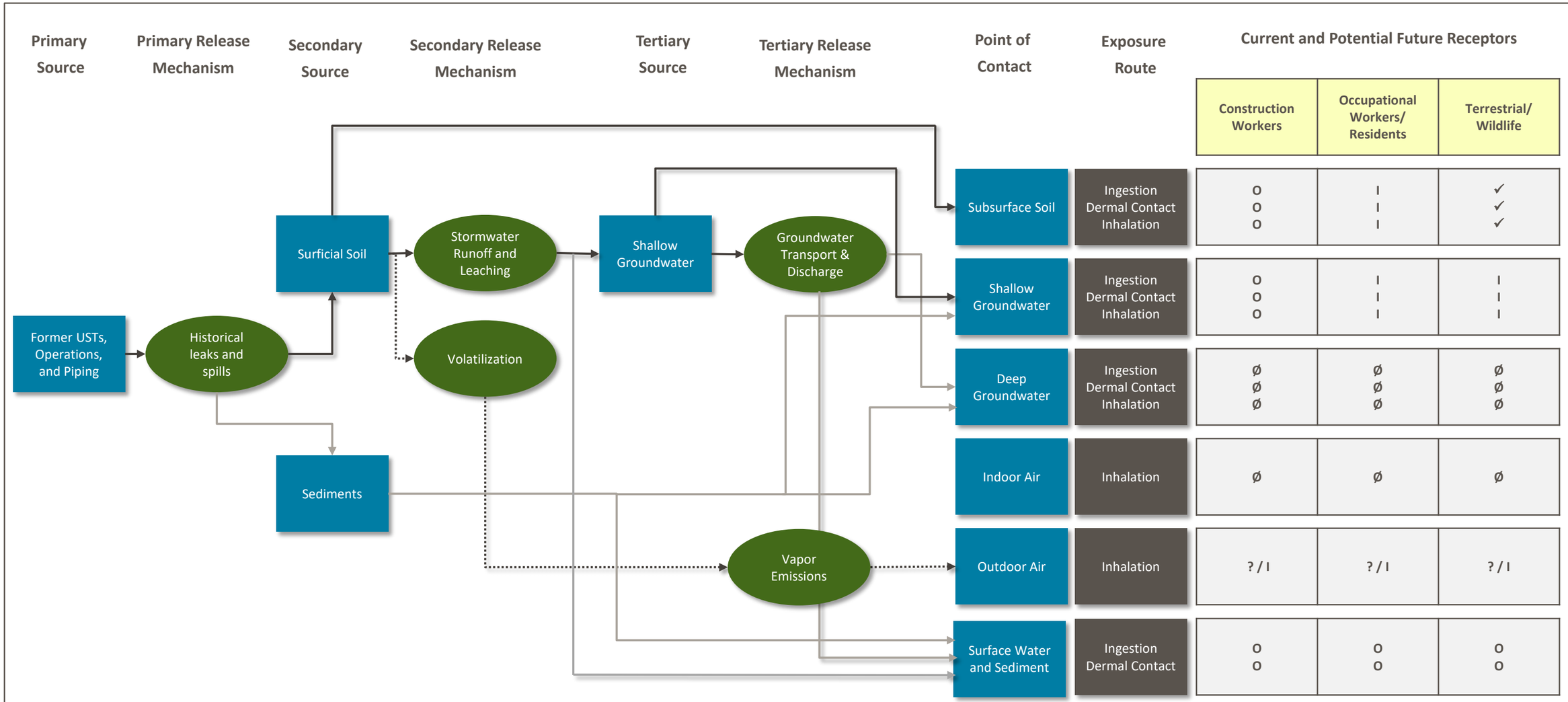
KOSMOS MILL
MORTON, WASHINGTON

# SEDIMENT ANALYTICAL DATA RESULTS

SEPTEMBER 2025

FIGURE 14

GIS: \\haleyaldrich.com\shareisea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_0014_SEDIMENT_ANALYTICAL_DATA_RESULTS.mxd - Vpehlivan - 9/10/2025 10:05:06 AM




**LEGEND**

- POTENTIALLY COMPLETE PATHWAY
- UNKNOWN PATHWAY
- CURRENTLY INCOMPLETE, BUT POTENTIAL FUTURE PATHWAY
- ✓ POTENTIALLY COMPLETE EXPOSURE ROUTE
- Ø INCOMPLETE EXPOSURE ROUTE
- I INSIGNIFICANT EXPOSURE ROUTE
- ? UNKOWN EXPOSURE ROUTE
- O CURRENTLY INCOMPLETE, BUT POTENTIAL FUTURE EXPOSURE ROUTE

**NOTES**

1. FT BGS = FEET BELOW GROUND SURFACE.
2. UST = UNDEGROUND STORAGE TANK.
3. COCS = CONTAMINANTS OF CONCERN
4. THE VAPOR INSTRUSION PATHWAY IS INCOMPLETE AS THERE ARE NO BUILDINGS LOCATED ON THE SITE.
5. A PLUME WAS NOT OBSERVED IN DEEP GROUNDWATER; THEREFORE, THE EXPOSURE PATHWAYS IN DEEP GROUNDWATER ARE CURRENTLY INCOMPLETE.
6. THE SITE WILL BE SEASONALLY SUBMERGED IN THE FUTURE, POTENTIALLY CREATING A PATHWAY FOR EXPOSURE AND RELEASE THROUGH SEDIMENT
7. RECREATIONAL FISHER AND AQUATIC BIOTA RECEPTOR EXPOSURE PATHWAYS ARE CONSIDERED INCOMPLETE: COCS WERE NOT DETECTED AT CONCENTRATIONS ABOVE APPLICABLE SCREENING LEVELS IN SAMPLES COLLECTED FROM THE SURFACE WATER AND SEDIMENT IN RAINEY CREEK.

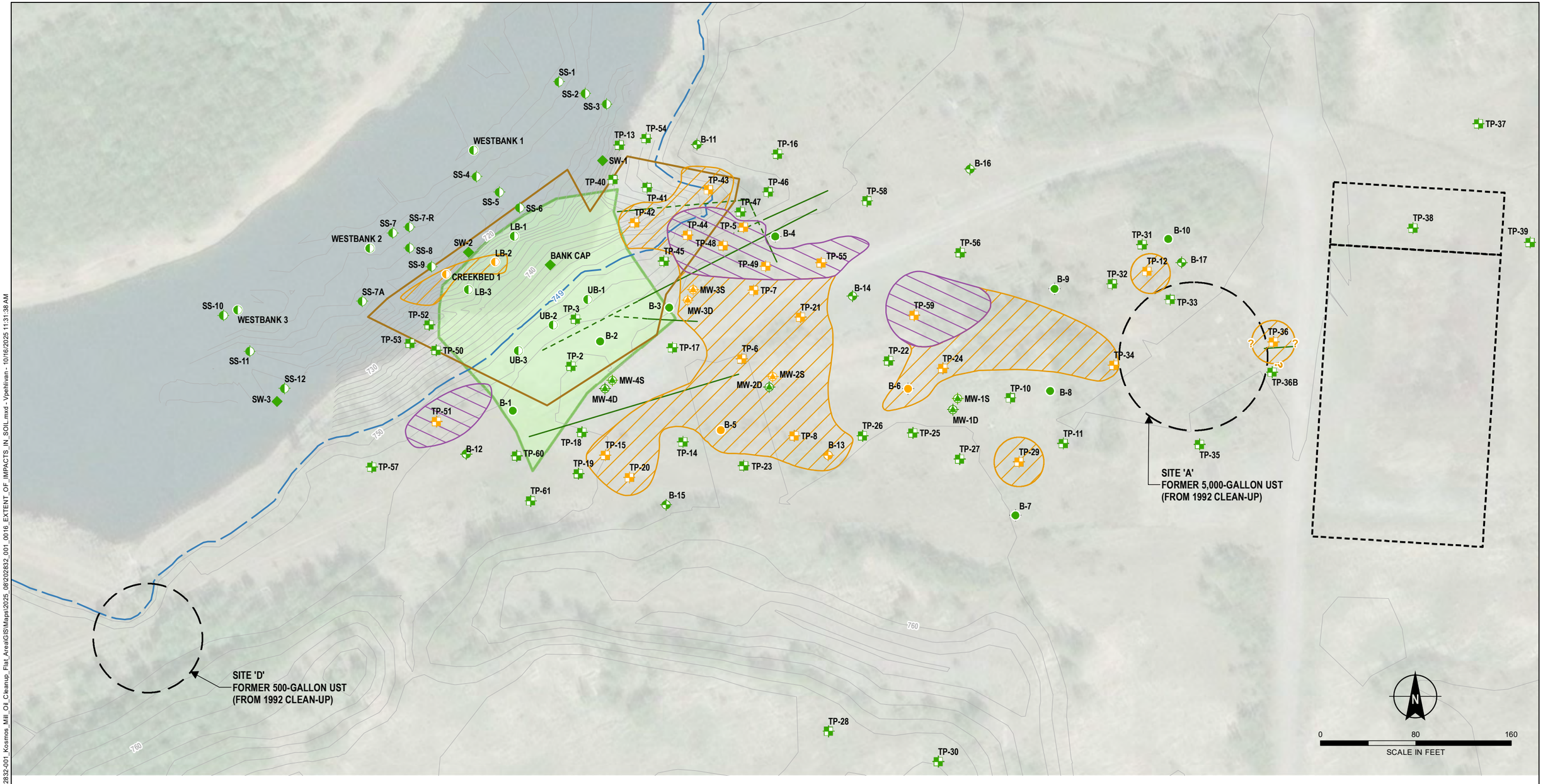
HALEY ALDRICH

FORMER KOSMOS MILL
KOSMOS FLATS AREA
MORTON, WASHINGTON

# CONCEPTUAL SITE MODEL

SEPTEMBER 2025

FIGURE 15




**LEGEND**

- MONITORING WELL
- BORING (2022)
- TEST PIT
- SEDIMENT SAMPLE
- SONIC BORING (2019)
- WATER SAMPLE
- CURRENT RESERVOIR'S FULL-POOL OPERATING ELEVATION, 749 FEET TCL
- PIPE ENCOUNTERED, LEFT IN PLACE
- PIPE ENCOUNTERED, REMOVED
- TOPOGRAPHIC ELEVATION CONTOUR, 2-FT INTERVAL
- INFERRED EXTENT OF GASOLINE RANGE PETROLEUM CONTAMINATED SOIL
- INFERRED EXTENT OF SITE COC CONTAMINATED SOIL
- AREA OF PROTECTIVE CAP
- EXTENT OF IRA EXCAVATION
- FORMER STOCKPILE AREA

**NOTES**

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. **GREEN SYMBOLS** INDICATES CONTAMINANTS OF CONCERN ARE BELOW APPLICABLE SCREENING LEVELS IN SOIL
3. **ORANGE SYMBOLS** INDICATES CONTAMINANTS OF CONCERN ARE DETECTED ABOVE APPLICABLE SCREENING LEVELS IN SOIL
4. IRA = INDEPENDENT REMEDIAL ACTION
5. DATA COLLECTED DURING PREVIOUS INVESTIGATIONS WAS ALSO USED TO CREATE THE APPROXIMATE EXTENT OF CONTAMINATION
6. TOPOGRAPHIC ELEVATION CONTOURS AND SITE FEATURES DATA SOURCE: TPU
7. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
8. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

HALEY ALDRICH

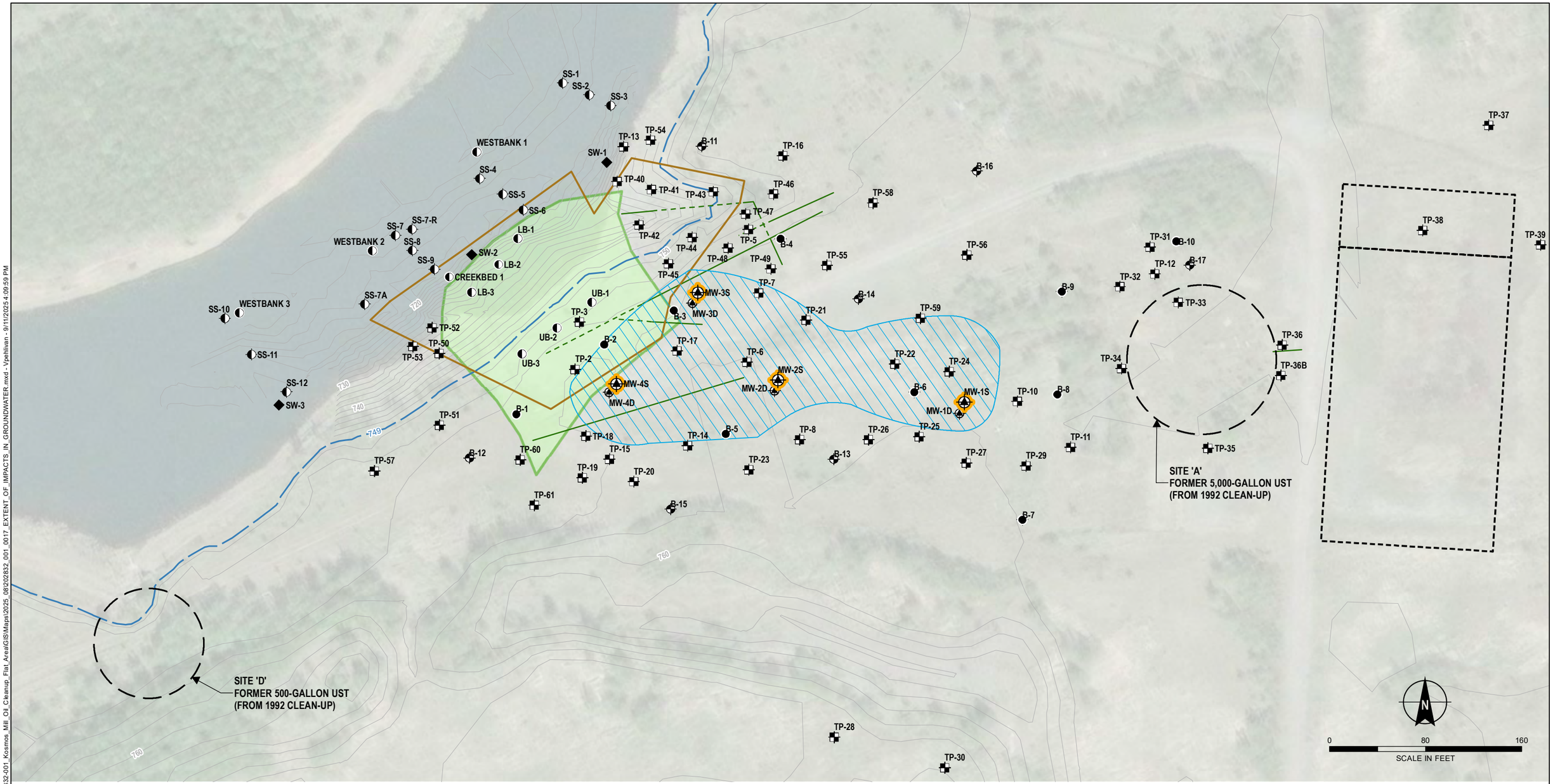
KOSMOS MILL
MORTON, WASHINGTON

# EXTENT OF IMPACTS IN SOIL

OCTOBER 2025

FIGURE 16

GIS: \\haleyaldrich.com\sharelsea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_0016_EXTENT_OF_IMPACTS_IN_SOIL.mxd - Vpehlivan - 10/16/2025 11:31:38 AM




**LEGEND**

- MONITORING WELL
- BORING (2022)
- TEST PIT
- SEDIMENT SAMPLE
- SONIC BORING (2019)
- WATER SAMPLE
- CURRENT RESERVOIR'S FULL-POOL OPERATING ELEVATION, 749 FEET TCL
- PIPE ENCOUNTERED, LEFT IN PLACE
- PIPE ENCOUNTERED, REMOVED
- TOPOGRAPHIC ELEVATION CONTOUR, 2-FT INTERVAL
- INFERRED EXTENT OF PETROLEUM CONTAMINATED SHALLOW GROUNDWATER
- AREA OF PROTECTIVE CAP
- EXTENT OF IRA EXCAVATION
- FORMER STOCKPILE AREA

**NOTES**

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ORANGE HALOS INDICATES CONTAMINANTS OF CONCERN ARE DETECTED ABOVE APPLICABLE SCREENING LEVELS IN SHALLOW GROUNDWATER
3. IRA = INDEPENDENT REMEDIAL ACTION.
4. DATA COLLECTED DURING PREVIOUS INVESTIGATIONS WAS ALSO USED TO CREATE THE APPROXIMATE EXTENT OF CONTAMINATION
5. TOPOGRAPHIC ELEVATION CONTOURS AND SITE FEATURES DATA SOURCE: TPU
6. TOPOGRAPHIC ELEVATION CONTOUR DATUM: TACOMA CITY LIGHT (TCL) DATUM
7. AERIAL IMAGERY SOURCE: ESRI, APRIL 22, 2024

HALEY ALDRICH

KOSMOS MILL
MORTON, WASHINGTON

# EXTENT OF IMPACTS IN SHALLOW GROUNDWATER

SEPTEMBER 2025

FIGURE 17

GIS: \\haleyaldrich.com\sharelsea_projects\Notebooks\0202832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_08\202832_001_0017_EXTENT_OF_IMPACTS_IN_GROUNDWATER.mxd - Vpehlivan - 9/11/2025 4:09:59 PM

# APPENDIX A
# Analytical Laboratory Reports from Tacoma Public Utilities, Tacoma Power

**SPECTRA Laboratories** ...Where experience matters

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

07/26/2021

Tacoma Power (TPU)
PO Box 11007
Tacoma, WA 98411
Attn: Matt Peter

Project: Kosmos Oil Clean Up
Client ID: SPP_Ledge_20210713
Sample Matrix: Water
Date Sampled: 07/13/2021
Date Received: 07/13/2021
Spectra Project: 2021070294
Spectra Number: 1

| Analyte | Result | Units | Method | Analyst | Date Analyzed |
|---|---|---|---|---|---|
| Arsenic | < 0.3 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Cadmium | < 0.2 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Chromium | < 0.5 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Copper | 1.5 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Lead | < 0.5 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Nickel | < 0.5 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Zinc | 3.7 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Mercury | < 0.5 | µg/L | EPA 245.1 | SCJ | 07/19/2021 |
| Diesel | <50.0 | µg/L | NWTPH-Dx | DCW | 07/23/2021 |
| Oil | <50.0 | µg/L | NWTPH-Dx | DCW | 07/23/2021 |
| Gasoline | <50.0 | µg/L | NWTPH-G | SCH | 07/16/2021 |
| Total Hardness | 20.3 | mg/L | SM 2340 B | SCJ | 07/19/2021 |
| Hexavalent Chromium | <0.01 | mg/L | SM3500-CR B | PT | 07/14/2021 |
| Benzene | <1.00 | µg/L | SW846 8260D | SCH | 07/16/2021 |
| Ethylbenzene | <1.00 | µg/L | SW846 8260D | SCH | 07/16/2021 |
| Toluene | <1.00 | µg/L | SW846 8260D | SCH | 07/16/2021 |
| Total Xylenes | <2.00 | µg/L | SW846 8260D | SCH | 07/16/2021 |
| Benzo(a)Anthracene | <1.00 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Benzo(a)Pyrene | <1.00 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Benzo(b)Fluoranthene | <1.00 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Benzo(k)Fluoranthene | <1.00 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Chrysene | <1.00 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Indeno(1,2,3-cd)Pyrene | <1.00 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Pyrene | <1.00 | µg/L | SW846 8270E | CEK | 07/19/2021 |

| Surrogate | % Recovery | Method |
|---|---|---|
| p-Terphenyl | 105 | NWTPH-Dx |
| Toluene-d8 | 100 | NWTPH-G |
| 4-Bromofluorobenzene | 98 | NWTPH-G |
| Nitrobenzene-d5 | 87 | SW846 8270E |

| Surrogate | % Recovery | Method |
|---|---|---|
| 2-Fluorobiphenyl | 76 | SW846 8270E |
| p-Terphenyl-d14 | 99 | SW846 8270E |

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Marie Holt

Marie Holt, Customer Support & Proj. Manager
a5/dcw

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07/26/2021

Tacoma Power (TPU)
PO Box 11007
Tacoma, WA 98411
Attn: Matt Peter

Project: Kosmos Oil Clean Up
Client ID: Debris_Ravine_20210713
Sample Matrix: Water
Date Sampled: 07/13/2021
Date Received: 07/13/2021
Spectra Project: 2021070294
Spectra Number: 2

| Analyte | Result | Units | Method | Analyst | Date Analyzed |
|---|---|---|---|---|---|
| Arsenic | < 0.3 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Cadmium | < 0.2 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Chromium | < 0.5 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Copper | 5.5 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Lead | 1.0 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Nickel | < 0.5 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Zinc | 39.4 | µg/L | EPA 200.8 | SCJ | 07/20/2021 |
| Mercury | < 0.5 | µg/L | EPA 245.1 | SCJ | 07/19/2021 |
| Diesel | 52.6 | µg/L | NWTPH-Dx | DCW | 07/23/2021 |
| Oil | 285* | µg/L | NWTPH-Dx | DCW | 07/23/2021 |
| Gasoline | <50.0 | µg/L | NWTPH-G | SCH | 07/16/2021 |
| Total Hardness | 21.7 | mg/L | SM 2340 B | SCJ | 07/19/2021 |
| Hexavalent Chromium | <0.01 | mg/L | SM3500-CR B | PT | 07/14/2021 |
| Benzene | <1.00 | µg/L | SW846 8260D | SCH | 07/16/2021 |
| Ethylbenzene | <1.00 | µg/L | SW846 8260D | SCH | 07/16/2021 |
| Toluene | <1.00 | µg/L | SW846 8260D | SCH | 07/16/2021 |
| Total Xylenes | <2.00 | µg/L | SW846 8260D | SCH | 07/16/2021 |
| Benzo(a)Anthracene | <0.948 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Benzo(a)Pyrene | <0.948 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Benzo(b)Fluoranthene | <0.948 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Benzo(k)Fluoranthene | <0.948 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Chrysene | <0.948 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Indeno(1,2,3-cd)Pyrene | <0.948 | µg/L | SW846 8270E | CEK | 07/19/2021 |
| Pyrene | <0.948 | µg/L | SW846 8270E | CEK | 07/19/2021 |

*Sample contains heavy oil range organics that do not resemble heavy oil reference pattern. Sample was quantified using heavy oil range response.

| Surrogate | % Recovery | Method |
|---|---|---|
| p-Terphenyl | 104 | NWTPH-Dx |
| Toluene-d8 | 101 | NWTPH-G |
| 4-Bromofluorobenzene | 103 | NWTPH-G |
| Nitrobenzene-d5 | 84 | SW846 8270E |

| Surrogate | % Recovery | Method |
|---|---|---|
| 2-Fluorobiphenyl | 69 | SW846 8270E |
| p-Terphenyl-d14 | 96 | SW846 8270E |

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Marie Holt

Marie Holt, Customer Support & Proj. Manager
a5/dcw

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July 20, 2021

Tacoma Power
PO Box 11007
Tacoma, WA 98411

Units: ug/L
Spectra Project: 2021070294
Applies to Spectra #'s 1-2
Analyst: SCJ

## QUALITY CONTROL RESULTS
### ICP-MS Metals - EPA Method 200.8 - Water

**Laboratory Reagent Blank (LRB)**

Date Digested: 7/20/2021 Date Analyzed: 7/20/2021

| Element | CAS # | Result |
|---|---|---|
| Arsenic | 7440-38-2 | < 0.3 |
| Cadmium | 7440-43-9 | < 0.2 |
| Chromium | 7440-47-3 | < 0.5 |
| Copper | 7440-50-8 | < 0.3 |
| Lead | 7439-92-1 | < 0.5 |
| Nickel | 7439-98-7 | < 0.5 |
| Zinc | 7440-66-6 | < 0.3 |

**Laboratory Fortified Blank (LFB)**

Date Digested: 7/20/2021 Date Analyzed: 7/20/2021

| Element | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Arsenic | 100.0 | 93.02 | 93.0 |
| Cadmium | 100.0 | 92.60 | 92.6 |
| Chromium | 100.0 | 93.54 | 93.5 |
| Copper | 100.0 | 98.99 | 99.0 |
| Lead | 100.0 | 91.17 | 91.2 |
| Nickel | 100.0 | 95.56 | 95.6 |
| Zinc | 100.0 | 94.09 | 94.1 |

LCS Recovery limits 85-115%

**Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

Date Digested: 7/20/2021 Date Analyzed: 7/20/2021
Sample Spiked: 2021070436-1

| Element | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Arsenic | 0.00 | 100.0 | 91.23 | 91.2 | 91.68 | 91.7 | 0.5 |
| Cadmium | 0.00 | 100.0 | 111.79 | 111.8 | 112.81 | 112.8 | 0.9 |
| Chromium | 0.00 | 100.0 | 96.57 | 96.6 | 98.56 | 98.6 | 2.0 |
| Copper | 4.47 | 100.0 | 99.13 | 94.7 | 99.69 | 95.2 | 0.6 |
| Lead | 0.00 | 100.0 | 95.11 | 95.1 | 94.19 | 94.2 | 1.0 |
| Nickel | 0.00 | 100.0 | 92.98 | 93.0 | 91.77 | 91.8 | 1.3 |
| Zinc | 29.56 | 100.0 | 123.03 | 93.5 | 121.97 | 92.4 | 1.1 |

Comment:
Recovery Limits 70-130%
RPD Limit 20

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7/19/2021

Tacoma Power
PO Box 11007
Tacoma, WA 98411

Units: mg/L
Spectra Project: 2021070294
Applies to Spectra #'s 1
Analyst: SCJ

## QUALITY CONTROL RESULTS

### ICP Metals - SM 2340B - Liquid/Water

#### Method Blank

Date Digested: 7/19/2021 Date Analyzed: 7/19/2021

| Element | Result |
|---|---|
| Calcium | < 0.025 |
| Magnesium | < 0.015 |

#### Laboratory Control Sample (LCS)

Date Digested: 7/19/2021 Date Analyzed: 7/19/2021

| Element | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Calcium | 1.0 | 1.062 | 106.2 |
| Magnesium | 1.0 | 1.049 | 104.9 |

LCS Recovery limits 80-120%

#### Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 7/19/2021 Date Analyzed: 7/19/2021
Sample Spiked: 2021070371-1

| Element | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Calcium | 7.566 | 1.0 | 8.411 | 84.5 | 8.429 | 86.3 | 2.1 |
| Magnesium | 1.600 | 1.0 | 2.583 | 98.3 | 2.572 | 97.2 | 1.1 |

Comment:
Recovery Limits 75-125%
RPD Limit 20
Hardness concentration by calculation: SM 2340B
Comments:

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July 19, 2021

Tacoma Power
PO Box 11007
Tacoma, WA 98411

Units: ug/L
Spectra Project: 2021070294
Applies to Spectra #'s: 1-2
Analyst:

## QUALITY CONTROL RESULTS

### Mercury by Cold Vapor - EPA 245.1

**Method Blank (MBLK)**

Date Digested: 7/19/2021 Date Analyzed: 7/19/2021

| | CAS # | Result |
|---|---|---|
| Mercury | 7439-97-6 | < 0.5 |

**Laboratory Control Spike (LCS)**

Date Digested: 7/19/2021 Date Analyzed: 7/19/2021

| | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Mercury | 2.0 | 2.18 | 108.8 |

LCS Recovery limits 80-120%

**Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

Date Digested: 7/19/2021 Date Analyzed: 7/19/2021
Sample Spiked: 2021070340-1

| | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00 | 2.0 | 1.95 | 97.3 | 2.02 | 101.0 | 3.7 |

Recovery Limits 70-130%
RPD Limit 20

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July 26, 2021

Tacoma Power (TPU)
PO Box 11007
Tacoma, WA 98411
Attn: Matt Peter

Method: NWTPH-DX
Sample Matrix: Water
Units: µg/L
Spectra Project: 2021070294
Applies to Spectra # 1-2

## NWTPH-DX ANALYSIS
## QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted: 7/20/2021 Date Analyzed: 7/23/2021

| Compound | Spike Amount Added | Spike Amount Found | Percent Recovery |
|---|---|---|---|
| Diesel | 2500 | 1396.00 | 56% |

METHOD BLANK

Date Extracted: 7/20/2021 Date Analyzed: 7/23/2021

| | |
|---|---|
| Diesel | <50.0 |
| Heavy Oil | <50.0 |

Surrogate Recovery:

| | |
|---|---|
| p-Terphenyl | 80% |

Surrogate Recovery Limits: 50 -150%

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July 19, 2021

Tacoma Public Utilities
PO Box 11007
Tacoma, WA 98411
Attn: James Bozic

Sample Matrix: Water
EPA Method: 8260D
Date Analyzed: 7/16/2021
Units: ug/L
Spectra Project: 2021070294
Applies to: 1-2

## METHOD NWTPH-Gx - LAB CONTROL SPIKE AND DUPLICATE

**Spiked Sample:** 2021070234-1

| COMPOUND | SAMPLE RESULT ug/L | SPIKE AMOUNT ug/L | MS AMOUNT ug/L | % REC | SAMPLE RESULT ug/L | DUPLICATE RESULT ug/L | RPD |
|---|---|---|---|---|---|---|---|
| Gasoline | <50.0 | 250 | 311 | 124 | <50.0 | <50 | N/A |

| Surrogates | SAMPLE | MS | DUP | |
|---|---|---|---|---|
| Dibromofluoromethane | 109 | 107 | 109 | % |
| 1,2-Dichloroethane-d4 | 106 | 103 | 106 | % |
| Toluene-d8 | 103 | 101 | 100 | % |
| 4-Bromofluorobenzene | 101 | 100 | 99 | % |

Matrix spike recovery is greater than the method defined upper limit. However, as gasoline was not detected in samples 2021070294 1-2, results are uneffected.

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July 19, 2021

Tacoma Public Utilities
PO Box 11007
Tacoma, WA 98411
Attn: James Bozic

Sample Matrix: Water
Spectra Project: 2021070294
Date Analyzed: 7/16/2021
Applies to Spectra #'s: 1-2

## GCMS VOLATILE ORGANIC ANALYSIS

### METHOD 8260D - LAB CONTROL SPIKE/METHOD BLANK

| COMPOUND | BLANK RESULT ug/L | Blank Spike Results (LCS) SPIKE AMOUNT ug/L | SPIKE RESULT ug/L | % REC |
|---|---|---|---|---|
| Benzene | <1.00 | 20.0 | 21.0 | 105 |
| Ethylbenzene | <1.00 | 20.0 | 20.3 | 101 |
| Methyl tert-butyl ether | <1.00 | 20.0 | 19.9 | 99 |
| Toluene | <1.00 | 20.0 | 20.1 | 101 |
| m, p-Xylene | <2.00 | 40.0 | 41.5 | 104 |
| o-Xylene | <1.00 | 20.0 | 20.3 | 102 |

### METHOD NWTPH-Gx - LAB CONTROL SPIKE/METHOD BLANK

| COMPOUND | BLANK RESULT ug/L | Blank Spike Results (LCS) SPIKE AMOUNT ug/L | SPIKE RESULT ug/L | % REC |
|---|---|---|---|---|
| Gasoline | <5.0 | 250 | 227 | 91 |

| Surrogates | 8260D LCS | NWTPH-Gx LCS | BLANK | |
|---|---|---|---|---|
| Dibromofluoromethane | 107 | 107 | 105 | % |
| 1,2-Dichloroethane-d4 | 104 | 103 | 106 | % |
| Toluene-d8 | 102 | 100 | 104 | % |
| 4-Bromofluorobenzene | 95 | 100 | 102 | % |

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July 19, 2021

Tacoma Public Utilities
PO Box 11007
Tacoma, WA 98411
Attn: James Bozic

Sample Matrix: Water
EPA Method: 8260D
Date Analyzed: 7/16/2021
Units: ug/L
Spectra Project: 2021070294
Applies to: 1-2

**GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D**
**Volatile Matrix Spike/Matrix Spike Duplicate Results (MS/MSD)**

**Spiked Sample:** 2021070234-1

| COMPOUND | SAMPLE RESULT | SPIKE AMOUNT | MS RESULT | % REC | MSD RESULT | % REC | RPD |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | <1.00 | 75.0 | 84.9 | 113 | 81.3 | 108 | 0 |
| Benzene | <1.00 | 75.0 | 79.4 | 106 | 76.9 | 103 | 0 |
| Trichloroethene | <1.00 | 75.0 | 65.8 | 88 | 63.9 | 85 | 0 |
| Toluene | <1.00 | 75.0 | 80.9 | 108 | 79.6 | 106 | 0 |
| Chlorobenzene | <1.00 | 75.0 | 73.4 | 98 | 72.6 | 97 | 0 |

| Surrogates | MS | MSD | |
|---|---|---|---|
| Dibromofluoromethane | 108 | 108 | % |
| 1,2-Dichloroethane-d4 | 107 | 108 | % |
| Toluene-d8 | 100 | 100 | % |
| 4-Bromofluorobenzene | 99 | 97 | % |

# SPECTRA Laboratories

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(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**

*As, Cr, Pb, Cd, Cu, Ni, Zn by 200.8

* Hg by 245.1 nm 7/13

** Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Indeno(1, 2, 3, -Cd)pyrene, Pyrene

Return Samples Y N Page of

# CHAIN of CUSTODY

SPECTRA PROJECT # 2021070294

STANDARD [X] RUSH [ ]

CLIENT: Tacoma Public Utilities (TPU) ADDRESS: ADDRESS CHANGE [ ]

PROJECT: Kosmos Oil Clean UP

CONTACT: MattPeter mpeter@cityoftacoma.org

SAMPLED BY: Ben Caviness

PHONE: 253-272-4850 FAX:

e-MAIL: bcaviness2@cityoftacoma.org Prefer FAX [ ] or e-MAIL [X]

PURCHASE ORDER #:

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 Semi VOA ** | 8270 PAH/PNA | 8082/608 PCB | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) * | Hex Chrom | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) | Low Level Mercury nm 7/13 | Hardness |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SPP_Ledge_20210713 | 7/13 | 13:30 | Water | | | | X | | X | | | | | X | | | | X | X | | | | | | | | | X | X |
| 2 | Debris_Ravine_20210713 | 7/13 | 13:30 | Water | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Send invoice to mpeter@cityof[illegible].org

T = 13.9°C

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | Benjamin Caviness | Benjamin Caviness | TPU | 7/13 | 15:55 |
| RECEIVED BY | | Nicole Millane | Spectra | 7/13 | ~~4:14~~ 3:55 |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, LLC*

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08/17/2021

Tacoma Power - Natural Resources
3628 S 35th St.
Tacoma, WA 98409
Attn: Matt Peter

Project: Kosmos Oil Cleanup
Client ID: 20210804_Debris_Ravine
Sample Matrix: Water
Date Sampled: 08/04/2021
Date Received: 08/04/2021
Spectra Project: 2021080102
Spectra Number: 1

| Analyte | Result | Units | Method |
|---|---|---|---|
| Arsenic | 0.6 | µg/L | EPA 200.8 |
| Cadmium | 0.4 | µg/L | EPA 200.8 |
| Chromium | < 0.5 | µg/L | EPA 200.8 |
| Copper | 19.5 | µg/L | EPA 200.8 |
| Lead | 8.8 | µg/L | EPA 200.8 |
| Nickel | 10.6 | µg/L | EPA 200.8 |
| Zinc | 320 | µg/L | EPA 200.8 |
| Dissolved Mercury | < 0.5 | µg/L | EPA 245.1 |
| Diesel | 84.3 | µg/L | NWTPH-Dx |
| Oil | <50.0 | µg/L | NWTPH-Dx |
| Gasoline | <50.0 | µg/L | NWTPH-G |
| Total Hardness | 57 | mg/L | SM 2340 B |
| Hexavalent Chromium | <0.01 | mg/L | SM3500-CR B |
| Benzene | <1.00 | µg/L | SW846 8260D |
| Ethylbenzene | <1.00 | µg/L | SW846 8260D |
| Toluene | <1.00 | µg/L | SW846 8260D |
| Total Xylenes | <2.00 | µg/L | SW846 8260D |
| Benzo(a)Anthracene | <0.943 | µg/L | SW846 8270E |
| Benzo(a)Pyrene | <0.943 | µg/L | SW846 8270E |
| Benzo(b)Fluoranthene | <0.943 | µg/L | SW846 8270E |
| Benzo(k)Fluoranthene | <0.943 | µg/L | SW846 8270E |
| Chrysene | <0.943 | µg/L | SW846 8270E |
| Indeno(1,2,3-cd)Pyrene | <0.943 | µg/L | SW846 8270E |
| Pyrene | <0.943 | µg/L | SW846 8270E |

| Surrogate | Recovery | Method |
|---|---|---|
| p-Terphenyl | 74 | NWTPH-Dx |
| Toluene-d8 | 100 | NWTPH-G |
| 4-Bromofluorobenzene | 99 | NWTPH-G |
| Nitrobenzene-d5 | 53 | SW846 8270E |
| 2-Fluorobiphenyl | 50 | SW846 8270E |
| p-Terphenyl-d14 | 55 | SW846 8270E |

SPECTRA LABORATORIES

Marie Holt

Marie Holt, Customer Support & Proj. Manager



a14/mlh

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08/17/2021

Tacoma Power - Natural Resources
3628 S 35th St.
Tacoma, WA 98409
Attn: Matt Peter

Project: Kosmos Oil Cleanup
Client ID: 20210804_Debris_Outlet
Sample Matrix: Water
Date Sampled: 08/04/2021
Date Received: 08/04/2021
Spectra Project: 2021080102
Spectra Number: 2

| Analyte | Result | Units | Method |
|---|---|---|---|
| Arsenic | < 0.3 | µg/L | EPA 200.8 |
| Cadmium | < 0.2 | µg/L | EPA 200.8 |
| Chromium | < 0.5 | µg/L | EPA 200.8 |
| Copper | 0.9 | µg/L | EPA 200.8 |
| Lead | < 0.5 | µg/L | EPA 200.8 |
| Nickel | < 0.5 | µg/L | EPA 200.8 |
| Zinc | < 0.3 | µg/L | EPA 200.8 |
| Dissolved Mercury | < 0.5 | µg/L | EPA 245.1 |
| Diesel | <50.0 | µg/L | NWTPH-Dx |
| Oil | <50.0 | µg/L | NWTPH-Dx |
| Gasoline | <50.0 | µg/L | NWTPH-G |
| Total Hardness | 19.5 | mg/L | SM 2340 B |
| Hexavalent Chromium | <0.01 | mg/L | SM3500-CR B |
| Benzene | <1.00 | µg/L | SW846 8260D |
| Ethylbenzene | <1.00 | µg/L | SW846 8260D |
| Toluene | <1.00 | µg/L | SW846 8260D |
| Total Xylenes | <2.00 | µg/L | SW846 8260D |
| Benzo(a)Anthracene | <0.943 | µg/L | SW846 8270E |
| Benzo(a)Pyrene | <0.943 | µg/L | SW846 8270E |
| Benzo(b)Fluoranthene | <0.943 | µg/L | SW846 8270E |
| Benzo(k)Fluoranthene | <0.943 | µg/L | SW846 8270E |
| Chrysene | <0.943 | µg/L | SW846 8270E |
| Indeno(1,2,3-cd)Pyrene | <0.943 | µg/L | SW846 8270E |
| Pyrene | <0.943 | µg/L | SW846 8270E |

| Surrogate | Recovery | Method |
|---|---|---|
| p-Terphenyl | 76 | NWTPH-Dx |
| Toluene-d8 | 102 | NWTPH-G |
| 4-Bromofluorobenzene | 103 | NWTPH-G |
| Nitrobenzene-d5 | 49 | SW846 8270E |
| 2-Fluorobiphenyl | 49 | SW846 8270E |
| p-Terphenyl-d14 | 62 | SW846 8270E |

SPECTRA LABORATORIES

Marie Holt

Marie Holt, Customer Support & Proj. Manager



a14/mlh

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August 5, 2021

Tacoma Power - Nathural Resources
3628 S. 35th St.
Tacoma, WA 98409

| | |
|---|---|
| Units: | ug/L |
| Spectra Project: | 2021080102 |
| Applies to Spectra #'s | 1-2 |
| Analyst: | SCJ |

## QUALITY CONTROL RESULTS

### ICP-MS Metals - EPA Method 200.8 - Water

#### Laboratory Reagent Blank (LRB)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

| Element | CAS # | Result |
|---|---|---|
| Arsenic | 7440-38-2 | < 0.3 |
| Cadmium | 7440-43-9 | < 0.2 |
| Chromium | 7440-47-3 | < 0.5 |
| Copper | 7440-50-8 | < 0.3 |
| Lead | 7439-92-1 | < 0.5 |
| Nickel | 7439-98-7 | < 0.5 |
| Zinc | 7440-66-6 | < 0.3 |

#### Laboratory Fortified Blank (LFB)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

| Element | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Arsenic | 100.0 | 102.32 | 102.3 |
| Cadmium | 100.0 | 113.96 | 114.0 |
| Chromium | 100.0 | 103.23 | 103.2 |
| Copper | 100.0 | 105.88 | 105.9 |
| Lead | 100.0 | 108.60 | 108.6 |
| Nickel | 100.0 | 104.94 | 104.9 |
| Zinc | 100.0 | 101.53 | 101.5 |

LCS Recovery limits 85-115%

#### Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021
Sample Spiked: 2021080087-1

| Element | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Arsenic | 0.00 | 100.0 | 110.68 | 110.7 | 112.80 | 112.8 | 1.9 |
| Cadmium | 0.00 | 100.0 | 113.61 | 113.6 | 116.77 | 116.8 | 2.7 |
| Chromium | 0.00 | 100.0 | 108.57 | 108.6 | 111.80 | 111.8 | 2.9 |
| Copper | 11.46 | 100.0 | 120.98 | 109.5 | 124.38 | 112.9 | 3.0 |
| Lead | 0.00 | 100.0 | 105.62 | 105.6 | 110.21 | 110.2 | 4.3 |
| Nickel | 0.58 | 100.0 | 108.48 | 107.9 | 111.05 | 110.5 | 2.4 |
| Zinc | 0.00 | 100.0 | 107.51 | 107.5 | 111.02 | 111.0 | 3.2 |

Comment:
Recovery Limits 70-130%
RPD Limit 20

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8/5/2021

Tacoma Power - Nathural Resources
3628 S. 35th St.
Tacoma, WA 98409

Units: mg/L
Spectra Project: 2021080102
Applies to Spectra #'s 1-2
Analyst: SCJ

## QUALITY CONTROL RESULTS

### ICP Metals - SM 2340B - Liquid/Water

#### Method Blank

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

| Element | Result |
|---|---|
| Calcium | < 0.025 |
| Magnesium | < 0.015 |

#### Laboratory Control Sample (LCS)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

| Element | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Calcium | 1.0 | 1.103 | 110.3 |
| Magnesium | 1.0 | 1.031 | 103.1 |

LCS Recovery limits 80-120%

#### Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021
Sample Spiked: 2021080087-1

| Element | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Calcium | 3.628 | 1.0 | 4.551 | 92.3 | 4.562 | 93.4 | 1.2 |
| Magnesium | 0.643 | 1.0 | 1.678 | 103.5 | 1.680 | 103.7 | 0.2 |

Comment:
Recovery Limits 75-125%
RPD Limit 20
Hardness concentration by calculation: SM 2340B
Comments:

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August 10, 2021

Tacoma Power - Nathural Resources
3628 S. 35th St.
Tacoma, WA 98409

| | |
|---|---|
| Units: | ug/L |
| Spectra Project: | 2021080102 |
| Applies to Spectra #'s: | 1-2 |
| Analyst: | SCJ |

## QUALITY CONTROL RESULTS

### Mercury by Cold Vapor - Dissolved - EPA 245.1 - Water/Liquid

**Dissolved Filter Blank**

Date Digested: 8/10/2021 Date Analyzed: 8/10/2021

| | CAS # | Result |
|---|---|---|
| Mercury | 7439-97-6 | < 0.5 |

**Laboratory Control Spike (LCS)**

Date Digested: 8/10/2021 Date Analyzed: 8/10/2021

| | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Mercury | 2.0 | 2.04 | 102.0 |

LCS Recovery limits 80-120%

**Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

Date Digested: 8/10/2021 Date Analyzed: 8/10/2021
Sample Spiked: 2021080102-1

| | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00 | 2.0 | 1.96 | 98.0 | 2.02 | 101.0 | 3.0 |

Recovery Limits 70-130%
RPD Limit 20

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August 6, 2021

Tacoma Public Utilities
PO Box 11007
Tacoma, WA 98411
Attn: James Bozic

Sample Matrix: Water
EPA Method: 8260D
Date Analyzed: 8/6/2021
Units: ug/L
Spectra Project: 2021080102
Applies to: #1-2

## METHOD NWTPH-Gx - LAB CONTROL SPIKE AND DUPLICATE

**Spiked Sample:** 2021080102-1

| COMPOUND | SAMPLE RESULT | SPIKE AMOUNT | MS AMOUNT | % REC | SAMPLE RESULT | DUPLICATE RESULT | RPD |
|---|---|---|---|---|---|---|---|
| Gasoline | <50.0 | 250 | 246 | 98 | <50.0 | <50.0 | N/A |

| Surrogates | Sample | Spike | Duplicate | |
|---|---|---|---|---|
| Dibromofluoromethane | 115 | 114 | 116 | % |
| 1,2-Dichloroethane-d4 | 111 | 108 | 111 | % |
| Toluene-d8 | 103 | 100 | 101 | % |
| 4-Bromofluorobenzene | 104 | 97 | 100 | % |

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August 6, 2021

Tacoma Public Utilities
PO Box 11007
Tacoma, WA 98411
Attn: James Bozic

Sample Matrix: Water
EPA Method: 8260D
Date Analyzed: 8/6/2021
Units: ug/L
Spectra Project: 2021080102
Applies to: #1-2

**GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D**
**Volatile Matrix Spike/Matrix Spike Duplicate Results (MS/MSD)**

**Spiked Sample:** 2021080102-1

| COMPOUND | SAMPLE RESULT | SPIKE AMOUNT | MS RESULT | % REC | MSD RESULT | % REC | RPD |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | <1.00 | 75.0 | 75.4 | 101 | 85.1 | 113 | 12.03% |
| Benzene | <1.00 | 75.0 | 73.8 | 98 | 81.5 | 109 | 9.92% |
| Trichloroethene | <1.00 | 75.0 | 75.4 | 101 | 78.6 | 105 | 4.16% |
| Toluene | <1.00 | 75.0 | 77.4 | 103 | 85.3 | 114 | 9.71% |
| Chlorobenzene | <1.00 | 75.0 | 64.9 | 87 | 69.9 | 93 | 7.42% |

| Surrogates | MS | MSD | |
|---|---|---|---|
| Dibromofluoromethane | 112 | 114 | % |
| 1,2-Dichloroethane-d4 | 111 | 113 | % |
| Toluene-d8 | 100 | 101 | % |
| 4-Bromofluorobenzene | 99 | 98 | % |

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August 6, 2021

Tacoma Public Utilities
PO Box 11007
Tacoma, WA 98411
Attn: James Bozic

Sample Matrix: Water
Spectra Project: 2021080102
Date Analyzed: 8/6/2021
Applies to Spectra #'s: #1-2

## GCMS VOLATILE ORGANIC ANALYSIS

### METHOD 8260D - LAB CONTROL SPIKE/METHOD BLANK

| COMPOUND | BLANK RESULT ug/L | Blank Spike Results (LCS) SPIKE AMOUNT ug/L | SPIKE RESULT ug/L | % REC |
|---|---|---|---|---|
| Benzene | <1.00 | 20.0 | 22.4 | 112 |
| Ethylbenzene | <1.00 | 20.0 | 21.7 | 109 |
| Methyl tert-butyl ether | <1.00 | 20.0 | 19.5 | 97 |
| Toluene | <1.00 | 20.0 | 21.75 | 109 |
| m, p-Xylene | <1.00 | 40.0 | 44.2 | 110 |
| o-Xylene | <1.00 | 20.0 | 21.5 | 107 |

### METHOD NWTPH-Gx - LAB CONTROL SPIKE/METHOD BLANK

| COMPOUND | | BLANK RESULT mg/Kg | Blank Spike Results (LCS) SPIKE AMOUNT mg/Kg | SPIKE RESULT mg/Kg | % REC |
|---|---|---|---|---|---|
| Gasoline | | <50.0 | 250 | 223 | 89 |
| Surrogates | | 8260D LCS | NWTPH-Gx LCS | BLANK | |
| | Dibromofluoromethane | 110 | 113 | 113 | % |
| | 1,2-Dichloroethane-d4 | 109 | 108 | 113 | % |
| | Toluene-d8 | 105 | 102 | 100 | % |
| | 4-Bromofluorobenzene | 94 | 100 | 98 | % |

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August 12, 2021

Tacoma Power- Natural Resources
3628 S 35th St.
Tacoma, WA 98409
Attn: Matt Peter

Method: NWTPH-DX
Sample Matrix: Water
Units: µg/L
Spectra Project: 2021080102
Applies to Spectra # 1-2

## NWTPH-DX ANALYSIS
## QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted: 8/10/2021 Date Analyzed: 8/12/2021

| Compound | Spike Amount Added | Spike Amount Found | Percent Recovery |
|---|---|---|---|
| Diesel | 2500 | 1774.00 | 71% |

METHOD BLANK

Date Extracted: 8/10/2021 Date Analyzed: 8/12/2021

| | |
|---|---|
| Diesel | <50.0 |
| Heavy Oil | <50.0 |

Surrogate Recovery:

| | |
|---|---|
| p-Terphenyl | 70% |

Surrogate Recovery Limits: 50 -150%

# SPECTRA Laboratories

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www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**

*As, Cr, Pb, Cd, Cu, Ni, Zn by 200.8+ ~~Hg~~ Hg-LL

** Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Indeno(1, 2, 3, -Cd)pyrene, Pyrene

Return Samples Y N Page of

# CHAIN of CUSTODY

SPECTRA PROJECT # 2021080102

STANDARD [X] RUSH [ ]

CLIENT: Tacoma Public Utilities ~~(TPU)~~ - Natural Resources

ADDRESS: 3628 S 35th St. ~~Ste~~ Tacoma, Wa, 98409

ADDRESS CHANGE [ ]

PROJECT: Kosmos Oil Cleanup

CONTACT: Beth Caviness

SAMPLED BY: Beth Caviness

PHONE: 253-272-4850 FAX:

e-MAIL: x2 mpeter@cityoftacoma.org bcaviness2@cityoftacoma.org Prefer FAX [ ] or e-MAIL [X]

PURCHASE ORDER #:

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 Semi VOA ** | 8270 PAH/PNA | 8082/608 PCB | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) * | Hex Chrom | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) | ~~Low Level Mercury~~ Hg-LL | Hardness | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20210804-Debris Outlet | 8/4/21 | 11:55 | water | 8 | | | X | | X | | | | | X | | | | X | X | | | | | | | | | X | X | | | |
| 2 | ~~20210804-Debris Outlet~~ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 20210804_Debris Outlet | 8/4/21 | 12:03 | water | 8 | | | X | | X | | | | | X | | | | X | X | | | | | | | | | X | X | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | Benjamin Caviness | Benjamin Caviness | Tacoma Power | 8/4/21 | 1510 |
| RECEIVED BY | [signature] | Lori Hamilton | Spectra | 8.4.21 | 1510 |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

- Send invoice to mpeter@cityoftacoma.org
- Payment through credit card not contract.

Matt Peter

T=20.6°

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable

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11/03/2021

Tacoma Power - Natural Resources
3628 S 35th St.
Tacoma, WA 98409
Attn: Matt Peter & Ben Caviness

Project: Kosmos Oil Clean Up
Client ID: 202211004_Rainey_Creek
Sample Matrix: Water
Date Sampled: 10/04/2021
Date Received: 10/04/2021
Spectra Project: 2021100056
Spectra Number: 1

| Analyte | Result | Reporting Limit | Units | Method | Analyst | Date Analyzed |
|---|---|---|---|---|---|---|
| Arsenic | ND | 0.3 | µg/L | EPA 200.8 | SCJ | 10/13/2021 |
| Cadmium | ND | 0.2 | µg/L | EPA 200.8 | SCJ | 10/13/2021 |
| Copper | 0.8 | 0.2 | µg/L | EPA 200.8 | SCJ | 10/13/2021 |
| Lead | ND | 0.5 | µg/L | EPA 200.8 | SCJ | 10/13/2021 |
| Nickel | ND | 0.5 | µg/L | EPA 200.8 | SCJ | 10/13/2021 |
| Zinc | 0.7 | 0.3 | µg/L | EPA 200.8 | SCJ | 10/13/2021 |
| Mercury | ND | 0.5 | µg/L | EPA 245.1 | SCJ | 10/25/2021 |
| Diesel | ND* | 94.3 | µg/L | NWTPH-Dx | RBF | 10/21/2021 |
| Oil | 392* | 236 | µg/L | NWTPH-Dx | RBF | 10/21/2021 |
| Gasoline | ND | 50.0 | µg/L | NWTPH-G | SCH | 10/06/2021 |
| Hexavalent Chromium | ND | 10 | µg/L | SM3500-CR B | CEK | 10/05/2021 |
| BTEX (total) | ND | 1.33 | µg/L | SW846 8260D | SCH | 10/06/2021 |
| Benzene | ND | 0.0732 | µg/L | SW846 8260D | SCH | 10/06/2021 |
| Ethylbenzene | ND | 0.0625 | µg/L | SW846 8260D | SCH | 10/06/2021 |
| Toluene | ND | 0.293 | µg/L | SW846 8260D | SCH | 10/06/2021 |
| Total Xylenes | ND | 0.897 | µg/L | SW846 8260D | SCH | 10/06/2021 |

ND = Analyte is not detected at reporting limit.

*Surrogate recovery was less than the lower control limit; associated results have a potential low bias. Semi-Volatiles could not be analyzed on this sample due to a refrigerator malfuction at the lab which froze and broke the bottles. Client contacted and resampling may take place.

| Surrogate | % Recovery | Method |
|---|---|---|
| p-Terphenyl | 35* | NWTPH-Dx |
| Toluene-d8 | 94 | NWTPH-G |
| 4-Bromofluorobenzene | 95 | NWTPH-G |

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Ben Frans, Laboratory Manager



a5/stb

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October 13, 2021

Tacoma Power - Nathural Resources
3628 S. 35th St.
Tacoma, WA 98409

Units: ug/L
Spectra Project: 2021100056
Applies to Spectra #'s 1
Analyst: SCJ

## QUALITY CONTROL RESULTS
### ICP-MS Metals - EPA Method 200.8 - Water

**Laboratory Reagent Blank (LRB)**

Date Digested: 10/13/2021 Date Analyzed: 10/13/2021

| Element | CAS # | Result |
|---|---|---|
| Arsenic | 7440-38-2 | < 0.3 |
| Cadmium | 7440-43-9 | < 0.2 |
| Copper | 7440-50-8 | < 0.3 |
| Lead | 7439-92-1 | < 0.5 |
| Nickel | 7439-98-7 | < 0.5 |
| Zinc | 7440-66-6 | < 0.3 |

**Laboratory Fortified Blank (LFB)**

Date Digested: 10/13/2021 Date Analyzed: 10/13/2021

| Element | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Arsenic | 100.0 | 95.82 | 95.8 |
| Cadmium | 100.0 | 97.78 | 97.8 |
| Copper | 100.0 | 94.36 | 94.4 |
| Lead | 100.0 | 96.24 | 96.2 |
| Nickel | 100.0 | 91.63 | 91.6 |
| Zinc | 100.0 | 94.98 | 95.0 |

LCS Recovery limits 85-115%

**Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

Date Digested: 10/13/2021 Date Analyzed: 10/13/2021
Sample Spiked: 2021100277-1

| Element | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Arsenic | 0.91 | 100.0 | 95.06 | 94.1 | 100.25 | 99.3 | 5.4 |
| Cadmium | 0.00 | 100.0 | 95.68 | 95.7 | 100.76 | 100.8 | 5.2 |
| Copper | 0.00 | 100.0 | 92.62 | 92.6 | 97.17 | 97.2 | 4.8 |
| Lead | 0.00 | 100.0 | 107.56 | 107.6 | 94.57 | 94.6 | 12.9 |
| Nickel | 0.00 | 100.0 | 89.93 | 89.9 | 95.64 | 95.6 | 6.2 |
| Zinc | 1.41 | 100.0 | 94.11 | 92.7 | 99.01 | 97.6 | 5.2 |

Comment:
Recovery Limits 70-130%
RPD Limit 20

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October 7, 2021

Tacoma Public Utilities
PO Box 11007
Tacoma, WA 98411
Attn: James Bozic

Sample Matrix: Water
Sample: LCS/BLANK
Date Analyzed: 10/6/2021
Spectra Project: 2021100056
Applies to: #1

## GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D

| COMPOUND | BLANK RESULT ug/L | Blank Spike Results (LCS) SPIKE AMOUNT ug/L | SPIKE RESULT ug/L | % REC |
|---|---|---|---|---|
| Benzene | <1.00 | 50 | 56 | 111 |
| Toluene | <1.00 | 50 | 53 | 106 |
| Ethylbenzene | <1.00 | 50 | 59 | 118 |
| M, P Xylene | <1.00 | 100 | 126 | 126 |
| O Xylene | <1.00 | 50 | 62 | 124 |

## METHOD NWTPH-Gx

| COMPOUND | BLANK RESULT ug/L | Blank Spike Results (LCS) SPIKE AMOUNT ug/L | SPIKE RESULT ug/L | % REC |
|---|---|---|---|---|
| Gasoline | <50 | 250.0 | 202.6 | 81 |

| Surrogates | 8260D LCS | NWTPH-Gx LCS | BLANK | |
|---|---|---|---|---|
| Dibromofluoromethane | 99 | 104 | 115 | % |
| 1,2-Dichloroethane-d4 | 104 | 103 | 113 | % |
| Toluene-d8 | 102 | 95 | 95 | % |
| 4-Bromofluorobenzene | 89 | 97 | 101 | % |

Xylene recovery is greater than the upper control limit. As all xylenes were non detects for the sample, results uneffected.

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October 7, 2021

Tacoma Public Utilities
PO Box 11007
Tacoma, WA 98411
Attn: James Bozic

Sample Matrix: Water
EPA Method: 8260D
Date Analyzed: 10/6/2021
Units: ug/L
Spectra Project: 2021100056
Applies to: #1

**GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D**
**Volatile Matrix Spike/Matrix Spike Duplicate Results (MS/MSD)**

**Spiked Sample:** 2021100154

| COMPOUND | SAMPLE RESULT | SPIKE AMOUNT | MS RESULT | % REC | MSD RESULT | % REC | RPD |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | <1.0 | 50.0 | 53.9 | 108 | 51.2 | 102 | 0 |
| Benzene | <1.0 | 50.0 | 51.6 | 103 | 48.4 | 97 | 0 |
| Trichloroethene | <1.0 | 50.0 | 49.8 | 100 | 47.3 | 95 | 0 |
| Toluene | <1.0 | 50.0 | 52.2 | 104 | 50.2 | 100 | 0 |
| Chlorobenzene | <1.0 | 50.0 | 48.6 | 97 | 47.7 | 95 | 0 |

| Surrogates | MS | MSD | |
|---|---|---|---|
| Dibromofluoromethane | 106 | 102 | % |
| 1,2-Dichloroethane-d4 | 103 | 97 | % |
| Toluene-d8 | 101 | 99 | % |
| 4-Bromofluorobenzene | 92 | 90 | % |

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October 7, 2021

Tacoma Public Utilities
PO Box 11007
Tacoma, WA 98411
Attn: James Bozic

Sample Matrix: Water
EPA Method: 8260D
Date Analyzed: 10/6/2021
Units: ug/L
Spectra Project: 2021100056
Applies to: #1

## METHOD NWTPH-Gx - LAB CONTROL SPIKE AND DUPLICATE

**Spiked Sample:** 2021100154

| COMPOUND | SAMPLE RESULT mg/Kg | SPIKE AMOUNT mg/Kg | MS AMOUNT mg/Kg | % REC | SAMPLE RESULT mg/Kg | DUPLICATE RESULT mg/Kg | RPD |
|---|---|---|---|---|---|---|---|
| Gasoline | 73.4 | 250 | 330 | 103 | 73.4 | 83 | 12 |

| Surrogates | Sample | Spike | DUP | |
|---|---|---|---|---|
| Toluene-d8 | 98 | 96 | 94 | % |
| 4-Bromofluorobenzene | 97 | 96 | 103 | % |

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October 22, 2021

Tacoma Power - Natural Resources
PO Box 11007
Tacoma, WA 98411
Attn: Matt Peter & Ben Caviness

Sample Matrix: Water
Spectra Project # 2021100056
Applies to Sample # 1

## WATER
## QUALITY CONTROL RESULTS
## CONVENTIONALS

| Analyte | Method | Date | Analyst | Method Blank Result | LCS % Rec. | Control Limits | Batch Duplicate RPD | Control Limits |
|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | SM 3500 Cr-D | 10/05/21 | CEK | <0.01 mg/L | 122 | 75-115 | 13.68 | ≤20 |

**Marie Holt** 2021100056

**From:** Marie Holt
**Sent:** Wednesday, October 06, 2021 8:52 AM
**To:** Peter, Matt
**Subject:** RE: 10/4/2021 Sample - Kosmos Oil

*Hi Matt,*

*The analysis we are unable to perform is the Semi-Volatiles. The bottles required for this analysis are (2) Liter amber non preserved. We can get away with (1) Liter, but unfortunately both of these bottles broke when the refrigerator malfunctioned and froze the samples.*

*Let me know how you want to proceed.*

*We sincerely apologize for this inconvenience.*

*Marie Holt*
*Customer Support and Project Manager*

**SPECTRA Laboratories**
2221 Ross Way
Tacoma, WA 98421
(253) 272-4850
MarieH@Spectra-Lab.com

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---

**From:** Peter, Matt <MPeter@cityoftacoma.org>
**Sent:** Wednesday, October 06, 2021 7:26 AM
**To:** Marie Holt <MarieH@spectra-lab.com>
**Subject:** RE: 10/4/2021 Sample - Kosmos Oil

Hi Marie,
Ben Caviness said he got a call indicating Spectra had an issue with one of their refrigeration units and we lost some samples. What analyses will you not be able to perform?

Matt

---

**From:** Marie Holt <MarieH@spectra-lab.com>
**Sent:** Monday, October 4, 2021 4:13 PM
**To:** Peter, Matt <MPeter@cityoftacoma.org>

# Communications Record

Internal Document

| | |
|---|---|
| Client: | Tacoma Power – Natural Resources |
| Client Contact: | Ben Caviness |
| Date: | 10-5-21 |
| Time: | 1:52 |
| Spectra Contact: | Marie Holt |
| Project: | Kosmos Oil Clean Up |
| Spectra Project: | 2021100056 |

I called Ben and explained that we had a major malfunction with one of our refrigerators overnight that caused two of their liter amber non preserved bottles to break.

Ben believes they can re-collect. He will speak to his boss Matt and to the Ecology rep. for this project and call me back.

Bottles broken:
(2) 1 L amber non pres.

**Marie Holt**

**From:** Peter, Matt <MPeter@cityoftacoma.org>
**Sent:** Monday, October 4, 2021 4:01 PM
**To:** Marie Holt
**Cc:** Ben Frans; Caviness, Ben
**Subject:** RE: 10/4/2021 Sample - Kosmos Oil

It is in the COC but I did not mention in the email below that Mercury by Method 245.1 needs to be assessed as well. Please assure that MDLs and PQLs are included in lab reports.

Matt

---

**From:** Peter, Matt
**Sent:** Monday, October 4, 2021 2:38 PM
**To:** Marie Holt (marieh@spectra-lab.com) <marieh@spectra-lab.com>
**Cc:** Ben Frans <BenF@spectra-lab.com>; Caviness, Ben <bcaviness2@cityoftacoma.org>
**Subject:** 10/4/2021 Sample - Kosmos Oil

All,
Ben is bringing in a sample this afternoon and attached is the COC form associated with the sample. I also am attaching the most updated "Tables" provided by Ecology. Note the following will be needed:

- Total Metals (As, Pb, Cd, Cu, Ni and Zn) by **200.8**
- Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Indeno(1, 2, 3, -Cd)pyrene, and Pyrene by **625.1**
- BTEX (benzene + toluene + ethylbenezene + m. o, p xylenes) by **SW 846 8021/8260**
- Petroleum Hydrocarbons by **NWTPH-Gx and NWTPH-Dx**
- Hex Cr by **SM3500-Cr C** (sub to another lab if unable to perform SM3500-Cr C; if unable to perform SM3500-Cr C or sub to another lab perform SM3500-Cr B and include detection level and quantitation levels in reports).

Please make sure to note MDLs and PQLs for all constituents on the lab report. See Attached tables for expected MDL and PQLs. Note that BTEX needs to be reported as combined or listed with each MDL for each compound to assure that the total is indeed below the indicator level (ex. we cannot have each constituent reported as < 1 µg/L since if all constituents were just below that the total still may exceed the 2.0 µg/L indicator levels).

If you have any additional questions or concerns please call me. Thank you.

Matt

*Matthew R. Peter*
Natural Resources Biologist
Tacoma Power
Generation/Natural Resources
3628 S. 35th St. Tacoma, WA 98409
Office/Cell: (253) 208-2814
mpeter@cityoftacoma.org

**Table 2. WQPP for Kosmos activities 9 September 2021 (lake)**

Parameters, analytical methods, detection limits (DLs) and quantitation levels (QLs) shown below, shall be used for water quality monitoring when the project site is backwatered by Riffe Lake (water levels above elevation 720 feet). Other methods may be used but must produce measurable results in the sample and be an EPA-approved method in 40 CFR Part 136. If an alternative method is used that is not specified in the list below the test method, DL, and QL will be defined in lab and/or monitoring reports and approved by Ecology's Water Quality Program Toxicologist prior to use of an alternative methodology. Indicator level values at or below those specified in the table are within compliance. This table is part of a Water Quality Protection Plan required by the Water Quality Certification and FERC License (P-2016).

| Pollutant & CAS No. (if available) | Sampling Frequency | Sample Type | Indicator Level, µg/L (unless noted) | Required Analytical Protocol | Detection Level, µg/L | Quantitation Level, µg/L |
|---|---|---|---|---|---|---|
| **METALS** | | | | | | |
| Arsenic, Total (7440-38-2) | When discharge occurs* | Grab | 360[a] | 200.8 | 0.1 | 0.5 |
| Chromium, (hex) (18540-29-9) | When discharge occurs* | Grab | 15[b] | SM3500-Cr C | 0.3 | 1.2 |
| Lead, Total (7439-92-1) | When discharge occurs* | Grab | 15.1[a] | 200.8 | 0.1 | 0.5 |
| Cadmium (7440-43-9) | When discharge occurs* | Grab | 1.0[a] | 200.8 | 0.05 | 0.25 |
| Mercury (7439-97-6) | When discharge occurs* | Grab | 2.10[a] | 1631E/245.1 | 0.0002 | 0.0005 |
| Copper (7440-50-8) | When discharge occurs* | Grab | 5.0[a] | 200.8 | 0.4 | 2.0 |
| Nickel (7440-02-0) | When discharge occurs* | Grab | 467.5[a] | 200.8 | 0.1 | 0.5 |
| Zinc (7440-66-6) | When discharge occurs* | Grab | 37.7[a] | 200.8 | 0.5 | 2.5 |
| **BASE/NEUTRAL COMPOUNDS** | | | | | | |
| Benzo(a)anthracene (56-55-3) | When discharge occurs* | Grab | 23.4 | 625.1 | 7.8 | 23.4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene (205-99-2) | When discharge occurs* | Grab | 14.4 | 610/625.1 | 4.8 | 14.4 |
| Benzo(k)fluoranthene (207-08-9) | When discharge occurs* | Grab | 7.5 | 610/625.1 | 2.5 | 7.5 |
| Benzo(a)pyrene (50-32-8) | When discharge occurs* | Grab | 7.5 | 610/625.1 | 2.5 | 7.5 |
| Chrysene (218-01-9) | When discharge occurs* | Grab | 7.5 | 610/625.1 | 2.5 | 7.5 |
| Indeno(1, 2, 3,-Cd)pyrene (193-39-5) | When discharge occurs* | Grab | 11.1 | 610/625.1 | 3.7 | 11.1 |
| Pyrene (129-00-0) | When discharge occurs* | Grab | 5.7 | 625.1 | 1.9 | 5.7 |
| **NONCONVENTIONAL POLLUTANTS** | | | | | | |
| BTEX (benzene + toluene + ethylbenzene + m, o, p xylenes) | When discharge occurs* | Grab | 2.0 | EPA SW 846 8021/8260 | 1.0 | 2.0 |
| **PETROLEUM HYDROCARBONS** | | | | | | |
| Gasoline-Range Hydrocarbons (NWTPH-Gx)[c] | When discharge occurs* | Grab | 250 [d] | NWTPH-Gx | 250 | 250 |
| Diesel-Range Hydrocarbons (NWTPH-Dx)[e] | When discharge occurs* | Grab | 250 [d] | NWTPH-Dx | 250 | 250 |

| | |
|---|---|
| a | Acute – Freshwater Toxic Substances Criteria (WAC 173-201A-240); metals for receiving waterbody of hardness value = 27 (winter time). Hardness will need to be verified through sampling and criteria adjusted accordingly. Heavy metal toxicity general decreases in freshwater as hardness increases. |
| b | Indicator Level total chromium is actually for hexavalent chromium using Acute – Freshwater Toxic Substances Criteria (WAC 173-201A-240), National Toxics Rule (40 CFR 131.36). |
| c | NWTPH-Gx = Northwest Total Petroleum Hydrocarbons –Volatile petroleum products (includes aviation and automotive gasolines, mineral spirits, Stoddard solvent and naphtha). |
| d | No surface water standard, value is laboratory quantitation level. |

| | |
|---|---|
| e | NWTPH-Dx = Northwest Total Petroleum Hydrocarbons – Semi-volatile ("diesel") for diesel range organics and heavy oils (includes jet fuels, kerosene, diesel-oils, hydraulic fluids, mineral oils, lubricating oils, and fuel oils). Indicator level is the sum of all the oils present. |
| f | Or equivalent. |
| * | Sampling to occur when discharges occur from stockpile area, when oil ledge is exposed to stormwater/lake water, when there is a sheen on standing water, or more frequently when Riffe Lake elevation fluctuates. Frequency and parameters assessed will be modified as specified by Ecology. |

**Table 1. WQPP for Kosmos activities 9 September 2021 (riverine)**

Parameters, analytical methods, detection limits (DLs) and quantitation levels (QLs) shown below, shall be used for water quality monitoring when the project site is **not** backwatered by Riffe Lake (water levels below elevation 720 feet, 2 feet above the bottom of the cap). Other methods may be used but must produce measurable results in the sample and be an EPA-approved method in 40 CFR Part 136. If an alternative method is used that is not specified in the list below the test method, DL, and QL will be defined in lab and/or monitoring reports and approved by Ecology's Water Quality Program Toxicologist prior to use of an alternative methodology. Indicator level values at or below those specified in the table are within compliance. This table is part of a Water Quality Protection Plan required by the Water Quality Certification and FERC License (P-2016).

| Pollutant & CAS No. (if available) | Sampling Frequency | Sample Type | Indicator Level, µg/L (unless noted) | Required Analytical Protocol | Detection Level, µg/L | Quantitation Level, µg/L |
|---|---|---|---|---|---|---|
| **METALS** | | | | | | |
| Arsenic, Total (7440-38-2) | When discharge occurs* | Grab | 360[a] | 200.8 | 0.1 | 0.5 |
| Chromium, (hex) (18540-29-9) | When discharge occurs* | Grab | 15[b] | SM3500-Cr C | 0.3 | 1.2 |
| Lead, Total (7439-92-1) | When discharge occurs* | Grab | 23.5[a] | 200.8 | 0.1 | 0.5 |
| Cadmium (7440-43-9) | When discharge occurs* | Grab | 1.5[a] | 200.8 | 0.05 | 0.25 |
| Mercury (7439-97-6) | When discharge occurs* | Grab | 2.10[a] | 1631E/245.1 | 0.0002 | 0.0005 |
| Copper (7440-50-8) | When discharge occurs* | Grab | 7.2[a] | 200.8 | 0.4 | 2.0 |
| Nickel (7440-02-0) | When discharge occurs* | Grab | 652[a] | 200.8 | 0.1 | 0.5 |
| Zinc (7440-66-6) | When discharge occurs* | Grab | 52.7[a] | 200.8 | 0.5 | 2.5 |
| **BASE/NEUTRAL COMPOUNDS** | | | | | | |
| Benzo(a)anthracene (56-55-3) | When discharge occurs* | Grab | 23.4 | 625.1 | 7.8 | 23.4 |
| Benzo(b)fluoranthene (205-99-2) | When discharge occurs* | Grab | 14.4 | 610/625.1 | 4.8 | 14.4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Benzo(k)fluoranthene (207-08-9) | When discharge occurs* | Grab | 7.5 | 610/625.1 | 2.5 | 7.5 |
| Benzo(a)pyrene (50-32-8) | When discharge occurs* | Grab | 7.5 | 610/625.1 | 2.5 | 7.5 |
| Chrysene (218-01-9) | When discharge occurs* | Grab | 7.5 | 610/625.1 | 2.5 | 7.5 |
| Indeno(1, 2, 3,-Cd)pyrene (193-39-5) | When discharge occurs* | Grab | 11.1 | 610/625.1 | 3.7 | 11.1 |
| Pyrene (129-00-0) | When discharge occurs* | Grab | 5.7 | 625.1 | 1.9 | 5.7 |
| **NONCONVENTIONAL POLLUTANTS** | | | | | | |
| BTEX (benzene + toluene + ethylbenzene + m, o, p xylenes) | When discharge occurs* | Grab | 2.0 | EPA SW 846 8021/8260 | 1.0 | 2.0 |
| **PETROLEUM HYDROCARBONS** | | | | | | |
| Gasoline-Range Hydrocarbons (NWTPH-Gx)[c] | When discharge occurs* | Grab | 250 [d] | NWTPH-Gx | 250 | 250 |
| Diesel-Range Hydrocarbons (NWTPH-Dx)[e] | When discharge occurs* | Grab | 250 [d] | NWTPH-Dx | 250 | 250 |

| | |
|---|---|
| a | Acute – Freshwater Toxic Substances Criteria (WAC 173-201A-240); metals for receiving waterbody of hardness value = 40 (winter time). Hardness will need to be verified through sampling and criteria adjusted accordingly. Heavy metal toxicity general decreases in freshwater as hardness increases. |
| b | Indicator Level total chromium is actually for hexavalent chromium using Acute – Freshwater Toxic Substances Criteria (WAC 173-201A-240), National Toxics Rule (40 CFR 131.36). |
| c | NWTPH-Gx = Northwest Total Petroleum Hydrocarbons –Volatile petroleum products (includes aviation and automotive gasolines, mineral spirits, Stoddard solvent and naphtha). |
| d | No surface water standard, value is laboratory quantitation level. |
| e | NWTPH-Dx = Northwest Total Petroleum Hydrocarbons – Semi-volatile ("diesel") for diesel range organics and heavy oils (includes jet fuels, kerosene, diesel-oils, hydraulic fluids, mineral oils, lubricating oils, and fuel oils). Indicator level is the sum of all the oils present. |

| | |
|---|---|
| f | Or equivalent. |
| * | Sampling to occur when discharges occur from stockpile area, when oil ledge is exposed to stormwater/lake water, when there is a sheen on standing water, or more frequently when Riffe Lake elevation fluctuates. Frequency and parameters assessed will be modified as specified by Ecology. |

# SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**

*As, Pb, Cd, Cu, Ni, and Zn by 200.8
Mercury by 245.1

** Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Indeno(1, 2, 3, -Cd)pyrene, and Pyrene by 625.1

Return Samples Y N X Page of

# CHAIN of CUSTODY

SPECTRA PROJECT # 2021000526

STANDARD [X] RUSH [ ]

CLIENT: Tacoma Power - Natural Resources ADDRESS: 3628 S 35th Tacoma, WA 98409 ADDRESS CHANGE [ ]

PROJECT: Kosmos Oil Clean Up

CONTACT: Matt Peter and Ben Caviness

SAMPLED BY: Ben Caviness

PHONE: Matt 253-208-2014 & Ben 253-222-6691

e-MAIL: mpeter@cityoftacoma.org Prefer FAX [ ]
bcaviness2@cityoftacoma.org or e-MAIL [X]

PURCHASE ORDER #:

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 Semi VOA ** | 8270 PAH/PNA | 8082/608 PCB | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY)* | Hex Chrom | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) | | | Hardness | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20211004-Rainey_Creek | 10/4/21 | 13:27 | Water | 7 | | | X | | X | | | | | X | | | | X | X | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Pay by credit card, contact Matt Peter for info

t= 12.2°C

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | Benjamin Caviness | Benjamin Caviness | Tacoma Power | 10/4 | 15:40 |
| RECEIVED BY | SBB | S. Beck | Spectra | 10/4/21 | 1542 |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, LLC*

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11/03/2021

Tacoma Power - Natural Resources
3628 S 35th St.
Tacoma, WA 98409
Attn: Matt Peter

Project: Kosmos Oil Clean Up
Client ID: 20211013_Rainey_Creek
Sample Matrix: Water
Date Sampled: 10/13/2021
Date Received: 10/13/2021
Spectra Project: 2021100358
Spectra Number: 1

| Analyte | Result | Reporting Limit | Units | Method | Analyst | Date Analyzed |
|---|---|---|---|---|---|---|
| Arsenic | ND | 0.3 | µg/L | EPA 200.8 | SCJ | 10/15/2021 |
| Cadmium | ND | 0.2 | µg/L | EPA 200.8 | SCJ | 10/15/2021 |
| Copper | 1.1 | 0.2 | µg/L | EPA 200.8 | SCJ | 10/15/2021 |
| Lead | ND | 0.5 | µg/L | EPA 200.8 | SCJ | 10/15/2021 |
| Nickel | ND | 0.5 | µg/L | EPA 200.8 | SCJ | 10/15/2021 |
| Zinc | 0.8 | 0.3 | µg/L | EPA 200.8 | SCJ | 10/15/2021 |
| Mercury | ND | 0.5 | µg/L | EPA 245.1 | SCJ | 10/15/2021 |
| Benzo(a)Anthracene | ND | 1.10 | µg/L | EPA 625.1 | CEK | 10/15/2021 |
| Benzo(a)Pyrene | ND | 1.10 | µg/L | EPA 625.1 | CEK | 10/15/2021 |
| Benzo(b)Fluoranthene | ND | 1.10 | µg/L | EPA 625.1 | CEK | 10/15/2021 |
| Benzo(k)Fluoranthene | ND | 1.10 | µg/L | EPA 625.1 | CEK | 10/15/2021 |
| Chrysene | ND | 1.10 | µg/L | EPA 625.1 | CEK | 10/15/2021 |
| Indeno(1,2,3-cd)Pyrene | ND | 1.10 | µg/L | EPA 625.1 | CEK | 10/15/2021 |
| Pyrene | ND | 1.10 | µg/L | EPA 625.1 | CEK | 10/15/2021 |
| Total Petroleum Hydrocarbons | 108 | 106 | µg/L | NWTPH-Dx | RBF | 10/22/2021 |
| Gasoline | ND | 100 | µg/L | NWTPH-G | SCH | 10/19/2021 |
| Hexavalent Chromium | ND | 10 | µg/L | SM3500-CR B | CEK | 10/14/2021 |
| BTEX (total) | ND | 1.33 | µg/L | SW846 8260D | SCH | 10/19/2021 |
| Benzene | ND | 0.0732 | µg/L | SW846 8260D | SCH | 10/19/2021 |
| Ethylbenzene | ND | 0.0625 | µg/L | SW846 8260D | SCH | 10/19/2021 |
| Toluene | ND | 0.293 | µg/L | SW846 8260D | SCH | 10/19/2021 |
| Total Xylenes | ND | 0.897 | µg/L | SW846 8260D | SCH | 10/19/2021 |

ND = Analyte is not detected at reporting limit.

| Surrogate | % Recovery | Method |
|---|---|---|
| p-Terphenyl | 100 | NWTPH-Dx |
| Toluene-d8 | 99 | NWTPH-G |
| 4-Bromofluorobenzene | 98 | NWTPH-G |
| Nitrobenzene-d5 | 87 | EPA 625.1 |

| Surrogate | % Recovery | Method |
|---|---|---|
| 2-Fluorobiphenyl | 77 | EPA 625.1 |
| p-Terphenyl-d14 | 105 | EPA 625.1 |

SPECTRA LABORATORIES

for

Ben Frans, Laboratory Manager



a5/stb

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October 25, 2021

Tacoma Power - Natrual Resources
3628S 35th St.
Tacoma, WA 98409

Method: NWTPH-Dx
Sample Matrix: liquid
Units: mg/L
Spectra Project: 2021100358
Batch DX20211021

## NWTPH-Dx ANALYSIS
## QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted: 10/20/2021 Date Analyzed: 10/21/2021

| Compound | Spike Amount Added | Spike Amount Found | Percent Recovery |
|---|---|---|---|
| Diesel | 2.50 | 1.75 | 70% |

METHOD BLANK

Date Extracted: 10/20/2021 Date Analyzed: 10/21/2021

| | |
|---|---|
| Total Pet. Hydrocarbons | <0.1 |
| Surrogate Recovery: | |
| p-Terphenyl | 125% |

Surrogate Recovery Limits: 50 -150%

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October 15, 2021

Tacoma Power - Nathural Resources
3628 S. 35th St.
Tacoma, WA 98409

Units: ug/L
Spectra Project: 2021100358
Applies to Spectra #'s 1
Analyst: SCJ

## QUALITY CONTROL RESULTS
### ICP-MS Metals - EPA Method 200.8 - Water
### Laboratory Reagent Blank (LRB)

Date Digested: 10/15/2021 Date Analyzed: 10/15/2021

| Element | CAS # | Result |
|---|---|---|
| Arsenic | 7440-38-2 | < 0.3 |
| Cadmium | 7440-43-9 | < 0.2 |
| Copper | 7440-50-8 | < 0.3 |
| Lead | 7439-92-1 | < 0.5 |
| Nickel | 7439-98-7 | < 0.5 |
| Zinc | 7440-66-6 | < 0.3 |

### Laboratory Fortified Blank (LFB)

Date Digested: 10/15/2021 Date Analyzed: 10/15/2021

| Element | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Arsenic | 100.0 | 106.79 | 106.8 |
| Cadmium | 100.0 | 98.18 | 98.2 |
| Copper | 100.0 | 107.08 | 107.1 |
| Lead | 100.0 | 93.78 | 93.8 |
| Nickel | 100.0 | 110.68 | 110.7 |
| Zinc | 100.0 | 93.35 | 93.4 |

LCS Recovery limits 85-115%

### Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 10/15/2021 Date Analyzed: 10/15/2021
Sample Spiked: 2021100350-4

| Element | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Arsenic | 4.41 | 100.0 | 112.60 | 108.2 | 115.22 | 110.8 | 2.4 |
| Cadmium | 0.00 | 100.0 | 95.68 | 95.7 | 100.76 | 100.8 | 5.2 |
| Copper | 0.00 | 100.0 | 92.62 | 92.6 | 97.17 | 97.2 | 4.8 |
| Lead | 0.00 | 100.0 | 107.56 | 107.6 | 94.57 | 94.6 | 12.9 |
| Nickel | 0.00 | 100.0 | 89.93 | 89.9 | 95.64 | 95.6 | 6.2 |
| Zinc | 1.41 | 100.0 | 94.11 | 92.7 | 99.01 | 97.6 | 5.2 |

Comment:
Recovery Limits 70-130%
RPD Limit 20

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October 15, 2021

Tacoma Power - Nathural Resources
3628 S. 35th St.
Tacoma, WA 98409

Units: ug/L
Spectra Project: 2021100358
Applies to Spectra #'s: 1
Analyst: SCJ

## QUALITY CONTROL RESULTS

### Mercury by Cold Vapor - EPA 245.1

**Method Blank (MBLK)**

Date Digested: 10/15/2021 Date Analyzed: 10/15/2021

| | CAS # | Result |
|---|---|---|
| Mercury | 7439-97-6 | < 0.5 |

**Laboratory Control Spike (LCS)**

Date Digested: 10/15/2021 Date Analyzed: 10/15/2021

| | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Mercury | 2.0 | 1.97 | 98.5 |

LCS Recovery limits 80-120%

**Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

Date Digested: 10/15/2021 Date Analyzed: 10/15/2021
Sample Spiked: 2021090284-1

| | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00 | 2.0 | 2.03 | 101.5 | 2.05 | 102.5 | 1.0 |

Recovery Limits 70-130%
RPD Limit 20

SPECTRA LABORATORIES

# SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**

***As, Pb, Cd, Cu, Ni, and Zn by 200.8**
**Mercury by 245.1**

** Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Indeno(1, 2, 3, -Cd)pyrene, and Pyrene by 625.1

Return Samples Y N X Page of

# CHAIN of CUSTODY

SPECTRA PROJECT # 202110358

STANDARD [X] RUSH [ ]

CLIENT: Tacoma Power - Natural Resources ADDRESS: 3628 S 35th Tacoma, WA 98409 ADDRESS CHANGE [ ]

PROJECT: Kosmos Oil Clean Up

CONTACT: Matt Peter and Ben Caviness

SAMPLED BY: Ben Caviness

PHONE: Matt 253-208-2014 & Ben 253-222-6691

e-MAIL: mpeter@cityoftacoma.org Prefer FAX [ ]
bcaviness2@cityoftacoma.org or e-MAIL [X]

PURCHASE ORDER #:

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS | | | | | | | ORGANICS | | | | | | METALS | | | | | | OTHER | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | | 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 Semi VOA ** | 8270 PAH/PNA | 8082/608 PCB | | TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY)* | Hex Chrom | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | | PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) | | | | Hardness | | | | |
| 1 | 20211013-Rainey-Creek | 10/13/21 | 12:30 | Water | 7 | | | X | | X | | | | | | X | | | | | X | X | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Call matt peter for payment by credit card

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | | Benjamin Caviness | Tacoma Power | 10/13/21 | 4:24 pm |
| RECEIVED BY | | MARIE HOLT | Spectra | 10-13-21 | 4:24 |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, LLC*

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2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

01/25/2022

Tacoma Power - Natural Resources
3628 S 35th St.
Tacoma, WA 98409
Attn: Matt Peter

Project: Kosmos Oil Clean Up
Client ID: 20211108-Bank_Cap
Sample Matrix: Water
Date Sampled: 11/08/2021
Date Received: 11/09/2021
Spectra Project: 2021110256
Spectra Number: 1

| Analyte | Result | Units | Method | Analyst | Date Analyzed |
|---|---|---|---|---|---|
| Arsenic | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Cadmium | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Chromium | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Copper | 2.04** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Lead | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Nickel | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Zinc | 2.64** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Mercury | < 0.5 | µg/L | EPA 245.1 | SCJ | 11/29/2021 |
| Benzo(a)Anthracene | <0.962 | µg/L | EPA 625.1 | CEK | 11/16/2021 |
| Benzo(a)Pyrene | <0.962 | µg/L | EPA 625.1 | CEK | 11/16/2021 |
| Benzo(b)Fluoranthene | <0.962 | µg/L | EPA 625.1 | CEK | 11/16/2021 |
| Benzo(k)Fluoranthene | <0.962 | µg/L | EPA 625.1 | CEK | 11/16/2021 |
| Chrysene | <0.962 | µg/L | EPA 625.1 | CEK | 11/16/2021 |

** Analyzed by Spectra Laboratories-Kitsap. See complete report provided. *Recovery for this analyte in the continuing calibration verification was greater than the upper control limit. As this analyte was not detected in the sample, results unaffected.

| Surrogate | Recovery | Method |
|---|---|---|
| Toluene-d8 | 94 | NWTPH-G |
| 4-Bromofluorobenzene | 96 | NWTPH-G |
| Nitrobenzene-d5 | 87 | EPA 625.1 |
| 2-Fluorobiphenyl | 79 | EPA 625.1 |

| Surrogate | Recovery | Method |
|---|---|---|
| p-Terphenyl-d14 | 99 | EPA 625.1 |
| p-Terphenyl | <0.094 | NWTPH-Dx |

SPECTRA LABORATORIES

Ben Frans, Laboratory Manager



a6/stb

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01/25/2022

Tacoma Power - Natural Resources
3628 S 35th St.
Tacoma, WA 98409
Attn: Matt Peter

Project: Kosmos Oil Clean Up
Client ID: 20211108-Bank_Cap
Sample Matrix: Water
Date Sampled: 11/08/2021
Date Received: 11/09/2021
Spectra Project: 2021110256
Spectra Number: 1

| Analyte | Result | Units | Method | Analyst | Date Analyzed |
|---|---|---|---|---|---|
| Indeno(1,2,3-cd)Pyrene | <0.962 | µg/L | EPA 625.1 | CEK | 11/16/2021 |
| Pyrene | <0.962 | µg/L | EPA 625.1 | CEK | 11/16/2021 |
| Total Pet. Hydrocarbons | 95 | ug/L | NWTPH-Dx | RBF | 12/15/2021 |
| Gasoline | <100 | µg/L | NWTPH-G | SCH | 11/18/2021 |
| Total Hardness | 31.9 | mg/L | SM 2340 B | SCJ | 12/02/2021 |
| Hexavalent Chromium | <0.01 | mg/L | SM3500-CR B | CEK | 11/09/2021 |
| BTEX (total) | <5.00 | µg/L | SW846 8260D | SCH | 11/18/2021 |
| Benzene | <1.00 | µg/L | SW846 8260D | SCH | 11/18/2021 |
| Ethylbenzene | <1.00 | µg/L | SW846 8260D | SCH | 11/18/2021 |
| Toluene | <1.00 | µg/L | SW846 8260D | SCH | 11/18/2021 |
| Total Xylenes | <2.00* | µg/L | SW846 8260D | SCH | 11/18/2021 |

** Analyzed by Spectra Laboratories-Kitsap. See complete report provided. *Recovery for this analyte in the continuing calibration verification was greater than the upper control limit. As this analyte was not detected in the sample, results unaffected.

| Surrogate | Recovery | Method |
|---|---|---|
| Toluene-d8 | 94 | NWTPH-G |
| 4-Bromofluorobenzene | 96 | NWTPH-G |
| Nitrobenzene-d5 | 87 | EPA 625.1 |
| 2-Fluorobiphenyl | 79 | EPA 625.1 |

| Surrogate | Recovery | Method |
|---|---|---|
| p-Terphenyl-d14 | 99 | EPA 625.1 |
| p-Terphenyl | <0.094 | NWTPH-Dx |

SPECTRA LABORATORIES

Ben Frans, Laboratory Manager



a6/stb

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Method: NWTPH-Dx
Sample Matrix: liquid
Units: mg/L
Spectra Project: 2021110256
Batch DX20211118-1

## NWTPH-Dx ANALYSIS
## QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted: 11/18/2021 Date Analyzed: 12/15/2021

| Compound | Spike Amount Added | Spike Amount Found | Percent Recovery |
|---|---|---|---|
| Diesel | 2.50 | 2.06 | 82% |

METHOD BLANK

Date Extracted: 11/18/2021 Date Analyzed: 12/15/2021

| | |
|---|---|
| Total Pet. Hydrocarbons | <0.1 |
| Surrogate Recovery: | |
| p-Terphenyl | 105% |

Surrogate Recovery Limits: 50 -150%
LCS Control limits 50-150%

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November 29, 2021

Tacoma Power - Nathural Resources
3628 S. 35th St.
Tacoma, WA 98409

Units: ug/L
Spectra Project: 2021110256
Applies to Spectra #'s: 1
Analyst: SCJ

## QUALITY CONTROL RESULTS

### Mercury by Cold Vapor - EPA 245.1

**Method Blank (MBLK)**

Date Digested: 11/29/2021 Date Analyzed: 11/29/2021

| | CAS # | Result |
|---|---|---|
| Mercury | 7439-97-6 | < 0.5 |

**Laboratory Control Spike (LCS)**

Date Digested: 11/29/2021 Date Analyzed: 11/29/2021

| | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Mercury | 2.0 | 1.94 | 97.0 |

LCS Recovery limits 80-120%

**Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

Date Digested: 11/29/2021 Date Analyzed: 11/29/2021
Sample Spiked: 2021110643-1

| | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00 | 2.0 | 1.97 | 98.5 | 2.22 | 111.0 | 11.9 |

Recovery Limits 70-130%
RPD Limit 20

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12/2/2021

Tacoma Power - Nathural Resources
3628 S. 35th St.
Tacoma, WA 98409

Units: mg/L
Spectra Project: 2021110256
Applies to Spectra #'s 1
Analyst: SCJ

## QUALITY CONTROL RESULTS

### ICP Metals - SM 2340B - Liquid/Water

#### Method Blank

Date Digested: 12/2/2021 Date Analyzed: 12/2/2021

| Element | Result |
|---|---|
| Calcium | < 0.025 |
| Magnesium | < 0.015 |

#### Laboratory Control Sample (LCS)

Date Digested: 12/2/2021 Date Analyzed: 12/2/2021

| Element | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Calcium | 1.0 | 1.022 | 102.2 |
| Magnesium | 1.0 | 0.979 | 97.9 |

LCS Recovery limits 80-120%

#### Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 12/2/2021 Date Analyzed: 12/2/2021
Sample Spiked: 2021110465-1

| Element | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Calcium | 16.682 | 1.0 | 17.468 | 78.6 | 17.636 | 95.4 | 19.3 |
| Magnesium | 8.677 | 1.0 | 9.506 | 82.9 | 9.568 | 89.1 | 7.2 |

Comment:
Recovery Limits 75-125%
RPD Limit 20
Hardness concentration by calculation: SM 2340B
Comments:

Spectra Laboratories

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*...Where experience matters*

## Analytical Report

Spectra Laboratories
2221 Ross Way
Tacoma, WA 98421

Project 2021110256
Sampler
Date Received 12/06/2021

**Client ID: 20211108_Bank_Cap** **Lab No: 126527-01** **Sample Date: 11/08/21**

| Analyte | Method | Result | Qualifiers | Units | PQL | Analysis Date | Analyst |
|---|---|---|---|---|---|---|---|
| Nickel | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Lead | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Copper | EPA 200.8 | 2.04 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Zinc | EPA 200.8 | 2.64 | B2 | ug/L | 1.0 | 12/10/2021 | JD |
| Chromium | EPA 200.8 | <1 | X | ug/L | 1.0 | 12/10/2021 | JD |
| Cadmium | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Arsenic | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |

**Lab Qualifiers Comments:**

B2 = Analyte was found in the associated blank, as well as in the sample, indicating possible/probable blank contamination. Results may be potentially biased high.

X = Laboratory LFB was above the laboratory acceptance limits. The target analyte was not detected in the sample.

**Approved By**

Jessica Donaldson
Laboratory Manager

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These results relate only to the items tested and the sample(s) as received by the laboratory. This report shall not be reproduced except in full, without prior express written approval by Spectra Laboratories.

# Analytical Report

Spectra Laboratories
2221 Ross Way
Tacoma, WA 98421

Project 2021110256
Sampler
Date Received 12/06/2021

## QC Results Summary

| Test | Test Date | Type of QC | Result |
|---|---|---|---|
| **Zinc** | **12/10/2021** | Blank: Blank | 3.0 |
| | | Blank: Digest Blank | 3.3 |
| | | Blank: Digest Blank | 3.5 |
| | | Matrix Spike Rec | 93.9 |
| | | Matrix Spike Rec | 104.1 |
| | | Matrix Spike Rec | 104.0 |
| | | Matrix Spike Rec Dup | 105.0 |
| | | Matrix Spike Rec Dup | 104.8 |
| | | Matrix Spike Rec Dup | 105.5 |
| | | Matrix Spike RPD | 11.1 |
| | | Matrix Spike RPD | 0.7 |
| | | Matrix Spike RPD | 1.3 |
| | | Standard: | Pass |
| **Copper** | **12/12/2021** | Blank: Blank | 0.4 |
| | | Blank: Digest Blank | 0.2 |
| | | Blank: Digest Blank | 0.2 |
| | | Matrix Spike Rec | 104.3 |
| | | Matrix Spike Rec | 100.3 |
| | | Matrix Spike Rec | 102.7 |
| | | Matrix Spike Rec Dup | 112.3 |
| | | Matrix Spike Rec Dup | 103.1 |
| | | Matrix Spike Rec Dup | 106.1 |
| | | Matrix Spike RPD | 3.2 |
| | | Matrix Spike RPD | 1.2 |
| | | Matrix Spike RPD | 11.3 |
| | | Standard: | Pass |
| **Arsenic** | **12/12/2021** | Blank: Digest Blank | 0.0 |
| | | Blank: Digest Blank | 0.0 |
| | | Matrix Spike Rec | 112.1 |
| | | Matrix Spike Rec | 106.4 |
| | | Matrix Spike Rec Dup | 117.9 |
| | | Matrix Spike Rec Dup | 120.7 |

# Analytical Report

Spectra Laboratories
2221 Ross Way
Tacoma, WA 98421

Project 2021110256
Sampler
Date Received 12/06/2021

| | | | |
|---|---|---|---|
| | | Matrix Spike RPD | 12.6 |
| | | Matrix Spike RPD | 5.0 |
| | | Standard: | Pass |
| **Lead** | **12/12/2021** | Blank: Digest Blank | 0.1 |
| | | Matrix Spike Rec | 104.3 |
| | | Matrix Spike Rec | 90.9 |
| | | Matrix Spike Rec Dup | 105.2 |
| | | Matrix Spike Rec Dup | 106.3 |
| | | Matrix Spike RPD | 1.9 |
| | | Matrix Spike RPD | 14.5 |
| | | Standard: | Pass |
| **Chromium** | **12/10/2021** | Blank: Digest Blank | 9.6 |
| | | Matrix Spike Rec | 103.3 |
| | | Matrix Spike Rec Dup | 103.3 |
| | | Matrix Spike RPD | 0.0 |
| | | Standard: | **Fail** |
| **Cadmium** | **12/13/2021** | Blank: Digest Blank | 0.0 |
| | | Matrix Spike Rec | 91.6 |
| | | Matrix Spike Rec Dup | 95.9 |
| | | Matrix Spike RPD | 4.6 |
| | | Standard: | Pass |
| **Nickel** | **12/10/2021** | Blank: Digest Blank | 0.0 |
| | | Matrix Spike Rec | 100.7 |
| | | Matrix Spike Rec Dup | 101.8 |
| | | Matrix Spike RPD | 1.0 |
| | | Standard: | Pass |

**Approved By**

Jessica Donaldson
Laboratory Manager

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These results relate only to the items tested and the sample(s) as received by the laboratory. This report shall not be reproduced except in full, without prior express written approval by Spectra Laboratories.

**SPECTRA Laboratories**
2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:
Due ASAP Past Due
See Digestion Log Provided

# CHAIN of CUSTODY

126527

**Return Samples** Y ___ N x **Page** 1 **of** 1 **STANDARD** ☐ **RUSH** ☐

CLIENT: Spectra Laboratories ADDRESS: 2221 Ross Way Tacoma WA 98421 ADDRESS CHANGE ☐

PROJECT: 2021110256
CONTACT: Spencer Beck
SUBBED TO: Port Orchard
PHONE: 253-272-4850 FAX: 253-572-9838
e-MAIL: office@spectra-lab.com Prefer FAX ☐ or e-MAIL ☐
PURCHASE ORDER #:

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | Drinking Water: Nitrate | Nitrite | N + N | Bacteria P/A | E. coli MPN 9223B Colilert QT | tot. coliform 9223B Colilert QT | Other: As, Cd, Cr, Cu, Pb, Ni, Zn | Nitrate | Nitrite | Enterococci 9230D Enterolert | Fecal Coliform MF | E. coli MPN 9223B Colilert | tot. coliform 9223B Colilert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20211108-Bank_Cap | 11/08/21 | | water | 1 | | | | | | | X | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | |
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| 0 | | | | | | | | | | | | | | | | | | |

LAB USE ONLY

Shipped Via:
US Mail UPS Fed Ex Courier Client

Shipping Container:
Cooler Box Envelope None

Tracking #_____

Custody Seals: Y N Intact: Y N

Cooler Temp. _____ Sample Temp. _____

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | Jen Draven | Jen Draven | Spectra-T | 12/06/21 | 1600 |
| RECEIVED BY | | Lori Hamilton | Spectra-T | 12/06/21 | 1600 |
| RELINQUISHED BY | | Lori Hamilton | Spectra-T | 12/06/21 | ~~1600~~ |
| RECEIVED BY | | Sara Kondo | Spectra PO | 11 | 1725 |

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, Inc.*

**SPECTRA Laboratories**
2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

**SPECIAL INSTRUCTIONS/COMMENTS:**
*As, Cr, Pb, Cd, Cu, Ni, Zn by 200.8
Mercury by 245.1
** Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Indeno(1, 2, 3, -Cd)pyrene, Pyrene
Return Samples Y N X Page 1 of 1

# CHAIN of CUSTODY

SPECTRA PROJECT # W2111056

STANDARD X RUSH

CLIENT: Tacoma Power - Natural Resources ADDRESS: 3628 S 35th Tacoma, WA 98409 ADDRESS CHANGE

PROJECT: Kosmos Oil Clean Up
CONTACT: Matt Peter and Ben Caviness
SAMPLED BY: Ben Caviness
PHONE: Ben 253-222-6691 & Matt 253-208-2014
e-MAIL: bcaviness2@cityoftacoma.org Prefer FAX
mpeter@cityoftacoma.org or e-MAIL
PURCHASE ORDER #:

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 Semi VOA ** | 8270 PAH/PNA | 8082/608 PCB | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) * | Hex Chrom | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) | | | | Hardness | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20211108_Conveyance | 11/8/21 | | Water | 7 | | | X | | X | | | | | X | | | | X | X | | | | | | | | | | | X | | | |
| 2 | 20211108_Bank_Cap | 11/8/21 | 2:15pm | Water | 7 | | | X | | X | | | | | X | | | | X | X | | | | | | | | | | | X | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Contact mpeter for payment

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | Benjamin Caviness | Benjamin Caviness | Tacoma Power | 11/8/21 | 5:24 |
| RECEIVED BY | Taylor Burkhart | Taylor Burkhart | Spectra | 11/8/21 | 7:56 A |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable

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01/07/2022

Tacoma Power - Natural Resources
3628 S 35th St.
Tacoma, WA 98409
Attn: Matt Peter/Ben Caviness

Project: Kosmos Oil Clean Up
Client ID: 20211123_Stockpile
Sample Matrix: Water
Date Sampled: 11/23/2021
Date Received: 11/23/2021
Spectra Project: 2021110626
Spectra Number: 1

| Analyte | Result | Units | Method | Analyst | Date Analyzed |
|---|---|---|---|---|---|
| Arsenic | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Cadmium | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Copper | 2.55** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Lead | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Nickel | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Zinc | 3.27** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Mercury | < 0.5 | µg/L | EPA 245.1 | SCJ | 11/29/2021 |
| Benzo(a)Anthracene | <1.0417 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Benzo(a)Pyrene | <1.0417 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Benzo(b)Fluoranthene | <1.0417 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Benzo(k)Fluoranthene | <1.0417 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Chrysene | <1.0417 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Indeno(1,2,3-cd)Pyrene | <1.0417 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Pyrene | <1.0417 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Total Pet. Hydrocarbons | <0.105 | ug/L | NWTPH-Dx | RBF | 12/11/2021 |
| Gasoline | <100*** | µg/L | NWTPH-G | SUB | 01/04/2022 |
| Total Hardness | 23.2 | mg/L | SM 2340 B | SCJ | 12/01/2021 |
| Hexavalent Chromium | <0.010* | mg/L | SM3500-CR B | KLH | 11/30/2021 |
| BTEX (total) | 1.1*** | µg/L | SW846 8260D | SUB | 01/04/2022 |
| Benzene | <0.20*** | µg/L | SW846 8260D | SUB | 01/04/2022 |
| Ethylbenzene | <0.20*** | µg/L | SW846 8260D | SUB | 01/04/2022 |
| Toluene | 0.06*** | µg/L | SW846 8260D | SUB | 01/04/2022 |
| Total Xylenes | <0.60*** | µg/L | SW846 8260D | SUB | 01/04/2022 |

*Sample analyzed outside of reommended method holding time per client request. ** Analyzed by Spectra Laboratories-Kitsap. See complete report provided. ***Analyzed by Analytical Resources. See complete report provided.

| Surrogate | % Recovery | Method |
|---|---|---|
| Toluene-d8 | 99.4*** | NWTPH-G |
| 4-Bromofluorobenzene | 91.7*** | NWTPH-G |
| Nitrobenzene-d5 | 59 | EPA 625.1 |
| 2-Fluorobiphenyl | 46 | EPA 625.1 |

| Surrogate | % Recovery | Method |
|---|---|---|
| p-Terphenyl-d14 | 73 | EPA 625.1 |
| p-Terphenyl | 100 | NWTPH-Dx |

SPECTRA LABORATORIES

Ben Frans, Laboratory Manager



a5/stb

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01/07/2022

Tacoma Power - Natural Resources
3628 S 35th St.
Tacoma, WA 98409
Attn: Matt Peter/Ben Caviness

Project: Kosmos Oil Clean Up
Client ID: 20211123_Conveyance_Outlet
Sample Matrix: Water
Date Sampled: 11/23/2021
Date Received: 11/23/2021
Spectra Project: 2021110626
Spectra Number: 2

| Analyte | Result | Units | Method | Analyst | Date Analyzed |
|---|---|---|---|---|---|
| Arsenic | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Cadmium | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Copper | 5.77** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Lead | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Nickel | <1** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Zinc | 13.8** | µg/L | EPA 200.8 | 225 | 12/10/2021 |
| Mercury | < 0.5 | µg/L | EPA 245.1 | SCJ | 11/29/2021 |
| Benzo(a)Anthracene | <0.96 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Benzo(a)Pyrene | <0.96 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Benzo(b)Fluoranthene | <0.96 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Benzo(k)Fluoranthene | <0.96 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Chrysene | <0.96 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Indeno(1,2,3-cd)Pyrene | <0.96 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Pyrene | <0.96 | µg/L | EPA 625.1 | RBF | 11/30/2021 |
| Total Pet. Hydrocarbons | 1.35 | ug/L | NWTPH-Dx | RBF | 12/11/2021 |
| Gasoline | <100*** | µg/L | NWTPH-G | SUB | 01/04/2022 |
| Hexavalent Chromium | <0.010* | mg/L | SM3500-CR B | KLH | 11/30/2021 |
| BTEX (total) | 1.1*** | µg/L | SW846 8260D | SUB | 01/04/2022 |
| Benzene | <0.20*** | µg/L | SW846 8260D | SUB | 01/04/2022 |
| Ethylbenzene | <0.20*** | µg/L | SW846 8260D | SUB | 01/04/2022 |
| Toluene | 0.07*** | µg/L | SW846 8260D | SUB | 01/04/2022 |
| Total Xylenes | <0.60*** | µg/L | SW846 8260D | SUB | 01/04/2022 |

*Sample analyzed outside of reommended method holding time per client request. ** Analyzed by Spectra Laboratories-Kitsap. See complete report provided. ***Analyzed by Analytical Resources. See complete report provided.

| Surrogate | % Recovery | Method |
|---|---|---|
| Toluene-d8 | 99.8*** | NWTPH-G |
| 4-Bromofluorobenzene | 90.6*** | NWTPH-G |
| Nitrobenzene-d5 | 60 | EPA 625.1 |
| 2-Fluorobiphenyl | 43 | EPA 625.1 |

| Surrogate | % Recovery | Method |
|---|---|---|
| p-Terphenyl-d14 | 101 | EPA 625.1 |
| p-Terphenyl | 89.5 | NWTPH-Dx |

SPECTRA LABORATORIES

Ben Frans, Laboratory Manager



a5/stb

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12/1/2021

Tacoma Power - Nathural Resources
3628 S. 35th St.
Tacoma, WA 98409

Units: mg/L
Spectra Project: 2021110626
Applies to Spectra #'s 1
Analyst: SCJ

## QUALITY CONTROL RESULTS

### ICP Metals - SM 2340B - Liquid/Water

#### Method Blank

Date Digested: 12/1/2021 Date Analyzed: 12/1/2021

| Element | Result |
|---|---|
| Calcium | < 0.025 |
| Magnesium | < 0.015 |

#### Laboratory Control Sample (LCS)

Date Digested: 12/1/2021 Date Analyzed: 12/1/2021

| Element | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Calcium | 1.0 | 1.082 | 108.2 |
| Magnesium | 1.0 | 0.997 | 99.7 |

LCS Recovery limits 80-120%

#### Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 12/1/2021 Date Analyzed: 12/1/2021
Sample Spiked: 2021110512-1

| Element | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Calcium | 1.528 | 1.0 | 2.531 | 100.3 | 2.525 | 99.7 | 0.6 |
| Magnesium | 2.658 | 1.0 | 3.558 | 90.0 | 3.534 | 87.6 | 2.7 |

Comment:
Recovery Limits 75-125%
RPD Limit 20
Hardness concentration by calculation: SM 2340B
Comments:

Spectra Laboratories

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November 29, 2021

Tacoma Power - Nathural Resources
3628 S. 35th St.
Tacoma, WA 98409

Units: ug/L
Spectra Project: 2021110626
Applies to Spectra #'s: 1-2
Analyst: SCJ

## QUALITY CONTROL RESULTS

### Mercury by Cold Vapor - EPA 245.1

**Method Blank (MBLK)**

Date Digested: 11/29/2021 Date Analyzed: 11/29/2021

| | CAS # | Result |
|---|---|---|
| Mercury | 7439-97-6 | < 0.5 |

**Laboratory Control Spike (LCS)**

Date Digested: 11/29/2021 Date Analyzed: 11/29/2021

| | Spike Added | LCS Conc. | LCS %Rec |
|---|---|---|---|
| Mercury | 2.0 | 1.94 | 97.0 |

LCS Recovery limits 80-120%

**Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

Date Digested: 11/29/2021 Date Analyzed: 11/29/2021
Sample Spiked: 2021110643-1

| | Sample Conc. | Spike Conc. | MS Conc. | MS %Rec | MSD Conc | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00 | 2.0 | 1.97 | 98.5 | 2.22 | 111.0 | 11.9 |

Recovery Limits 70-130%
RPD Limit 20

SPECTRA LABORATORIES

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Method: NWTPH-Dx
Sample Matrix: liquid
Units: mg/L
Spectra Project: 2021110626
Batch DX20211129-1

## NWTPH-Dx ANALYSIS
## QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted: 11/29/2021 Date Analyzed: 12/11/2021

| Compound | Spike Amount Added | Spike Amount Found | Percent Recovery |
|---|---|---|---|
| Diesel | 2.50 | 2.54 | 101% |

METHOD BLANK

Date Extracted: 11/29/2021 Date Analyzed: 12/11/2021

| | |
|---|---|
| Total Pet. Hydrocarbons | <0.1 |
| Surrogate Recovery: | |
| p-Terphenyl | 105% |

Surrogate Recovery Limits: 50 -150%
LCS Control limits 50-150%

# SPECTRA Laboratories - Kitsap

*...Where experience matters*

## Analytical Report

Spectra Laboratories
2221 Ross Way
Tacoma, WA 98421

Project 2021110626
Sampler
Date Received 12/06/2021

**Client ID: 110626-1** **Lab No: 126542-01** **Sample Date: 11/23/21**

| Analyte | Method | Result | Qualifiers | Units | PQL | Analysis Date | Analyst |
|---|---|---|---|---|---|---|---|
| Nickel | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Lead | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Zinc | EPA 200.8 | 3.27 | B2 | ug/L | 1.0 | 12/10/2021 | JD |
| Arsenic | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Copper | EPA 200.8 | 2.55 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Cadmium | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |

**Client ID: 110626-2** **Lab No: 126542-02** **Sample Date: 11/23/21**

| Analyte | Method | Result | Qualifiers | Units | PQL | Analysis Date | Analyst |
|---|---|---|---|---|---|---|---|
| Nickel | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Lead | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Zinc | EPA 200.8 | 13.8 | B2 | ug/L | 1.0 | 12/10/2021 | JD |
| Arsenic | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Copper | EPA 200.8 | 5.77 | --- | ug/L | 1.0 | 12/10/2021 | JD |
| Cadmium | EPA 200.8 | <1 | --- | ug/L | 1.0 | 12/10/2021 | JD |

**Lab Qualifiers Comments:**

**Approved By**

Jessica Donaldson
Laboratory Manager

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These results relate only to the items tested and the sample(s) as received by the laboratory. This report shall not be reproduced except in full, without prior express written approval by Spectra Laboratories.

# Analytical Report

Spectra Laboratories
2221 Ross Way
Tacoma, WA 98421

Project 2021110626
Sampler
Date Received 12/06/2021

## QC Results Summary

| Test | Test Date | Type of QC | Result |
|---|---|---|---|
| **Zinc** | **12/10/2021** | Blank: Blank | 3.0 |
| | | Blank: Digest Blank | 3.3 |
| | | Blank: Digest Blank | 3.5 |
| | | Matrix Spike Rec | 93.9 |
| | | Matrix Spike Rec | 104.1 |
| | | Matrix Spike Rec | 104.0 |
| | | Matrix Spike Rec Dup | 105.0 |
| | | Matrix Spike Rec Dup | 104.8 |
| | | Matrix Spike Rec Dup | 105.5 |
| | | Matrix Spike RPD | 11.1 |
| | | Matrix Spike RPD | 0.7 |
| | | Matrix Spike RPD | 1.3 |
| | | Standard: | Pass |
| **Copper** | **12/12/2021** | Blank: Blank | 0.4 |
| | | Blank: Digest Blank | 0.2 |
| | | Blank: Digest Blank | 0.2 |
| | | Matrix Spike Rec | 100.3 |
| | | Matrix Spike Rec | 102.7 |
| | | Matrix Spike Rec | 104.3 |
| | | Matrix Spike Rec Dup | 106.1 |
| | | Matrix Spike Rec Dup | 103.1 |
| | | Matrix Spike Rec Dup | 112.3 |
| | | Matrix Spike RPD | 1.2 |
| | | Matrix Spike RPD | 11.3 |
| | | Matrix Spike RPD | 3.2 |
| | | Standard: | Pass |
| **Arsenic** | **12/12/2021** | Blank: Digest Blank | 0.0 |
| | | Blank: Digest Blank | 0.0 |
| | | Matrix Spike Rec | 106.4 |
| | | Matrix Spike Rec | 112.1 |
| | | Matrix Spike Rec Dup | 117.9 |
| | | Matrix Spike Rec Dup | 120.7 |

# Analytical Report

Spectra Laboratories
2221 Ross Way
Tacoma, WA 98421

Project 2021110626
Sampler
Date Received 12/06/2021

| | | | |
|---|---|---|---|
| | | Matrix Spike RPD | 5.0 |
| | | Matrix Spike RPD | 12.6 |
| | | Standard: | Pass |
| **Lead** | **12/12/2021** | Blank: Digest Blank | 0.1 |
| | | Matrix Spike Rec | 104.3 |
| | | Matrix Spike Rec | 90.9 |
| | | Matrix Spike Rec Dup | 105.2 |
| | | Matrix Spike Rec Dup | 106.3 |
| | | Matrix Spike RPD | 1.9 |
| | | Matrix Spike RPD | 14.5 |
| | | Standard: | Pass |
| **Cadmium** | **12/13/2021** | Blank: Digest Blank | 0.0 |
| | | Matrix Spike Rec | 91.6 |
| | | Matrix Spike Rec Dup | 95.9 |
| | | Matrix Spike RPD | 4.6 |
| | | Standard: | Pass |
| **Nickel** | **12/10/2021** | Blank: Digest Blank | 0.0 |
| | | Matrix Spike Rec | 100.7 |
| | | Matrix Spike Rec Dup | 101.8 |
| | | Matrix Spike RPD | 1.0 |
| | | Standard: | Pass |

**Approved By**

Jessica Donaldson
Laboratory Manager

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SPECTRA Laboratories
2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:
Due ASAP Past Due
See Digestion Log Provided

# CHAIN of CUSTODY

126542

Return Samples Y ___ N x Page 1 of 1 STANDARD ☐ RUSH ☐

CLIENT: Spectra Laboratories ADDRESS: 2221 Ross Way Tacoma WA 98421 ADDRESS CHANGE ☐

PROJECT: 2021110626

CONTACT: Spencer Beck

SUBBED TO: Port Orchard

PHONE: 253-272-4850 FAX: 253-572-9838

e-MAIL: office@spectra-lab.com Prefer FAX ☐ or e-MAIL ☐

PURCHASE ORDER #:

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | Drinking Water: Nitrate | Nitrite | N + N | Bacteria P/A | E. coli MPN 9223B Colilert QT | tot. coliform 9223B Colilert QT | Other: As, Cd, Cu, Pb, Ni, Zn | Nitrate | Nitrite | Enterococci 9230D Enterolert | Fecal Coliform MF | E. coli MPN 9223B Colilert | tot. coliform 9223B Colilert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 110626-1 | 11/23/21 | 1100 | water | 1 | | | | | | | X | | | | | | |
| 2 | 110626-2 | 11/23/21 | 1120 | water | 1 | | | | | | | X | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | |

LAB USE ONLY

Shipped Via:
US Mail UPS Fed Ex Courier Client

Shipping Container:
Cooler Box Envelope None

Tracking #_____

Custody Seals: Y N Intact: Y N

Cooler Temp. _____ Sample Temp. _____

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | Jen Draven | Jen Draven | Spectra-T | 12/06/21 | 1600 |
| RECEIVED BY | | Lori Hamilton | Spectra-T | 12/06/21 | 1600 |
| RELINQUISHED BY | | Lori Hamilton | Spectra-T | 12/06/21 | 1725 |
| RECEIVED BY | | Sara Kaelo | SpectraPO | " | " |

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Analytical, Inc.*

**Analytical Resources, LLC**
**Analytical Chemists and Consultants**

05 January 2022

Spencer Beck
Spectra Laboratories
2221 Ross Way
Tacoma, WA 98421

RE: VOCs solids and waters

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

| Associated Work Order(s) | Associated SDG ID(s) |
|---|---|
| 22A0045 | N/A |

Shelly Fishel

Digitally signed by Shelly Fishel
Date: 2022.01.05 11:19:25 -08'00'

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Shelly Fishel, Project Manager

nelac Cert# 100006-012

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

22A0045

**SPECTRA Laboratories**

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# CHAIN of CUSTODY

Turnaround Time Requested

**1-Day TAT Please**

Return Samples Yes___ No_X___

CLIENT: Spectra Laboratories ADDRESS: 2221 Ross Way Tacoma, WA ZIP: 98421 ADDRESS CHANGE ☐

PROJECT: 2021110626

CONTACT: Spencer Beck

SUBBED TO: ARI

PHONE: 253-272-4850

e-MAIL: office@spectra-lab.com

PURCHASE ORDER #:

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: BTEX by 8260 µg/L | HYDROCARBONS: NWTPH-Gx | HYDROCARBONS: 1664 SGT-HEM (TPH) | HYDROCARBONS: 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | ORGANICS: 8260 CHLOR SOLVENTS | ORGANICS: 8270/625 SEMI VOA | ORGANICS: 8270 PAH/PNA | ORGANICS: 8082/608 PCB | METALS: TOTAL METALS RCRA 8 | METALS: TOTAL METALS (SPECIFY) | METALS: See Attached List | METALS: TCLP METALS RCRA 8 | METALS: TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | OTHER: TX/TOX 9076 | OTHER: TURBIDITY | OTHER: FLASH POINT | OTHER: BOD | OTHER: SOLIDS (SPECIFY) | OTHER: Fecal Coliform - MPN or MF | OTHER: Hg by 1631E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 110626-1 | 11/23/21 | 1100 | water | 2 | X | X | | | | | | | | | | | | | | | | | | | | |
| 2 | 110626-2 | 11/23/21 | 1120 | water | 2 | X | X | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

SPECIAL INSTRUCTIONS/COMMENTS: Please run out of hold

| Sample Receipt (lab use only) | | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|---|
| Total # of containers _____ | RELINQUISHED BY | Jen Draven | Jen Draven | Spectra | 01/04/22 | 12 — |
| COC seals present? _____ Intact?_____ | RECEIVED BY | | Bruce McMullin | Spectra | 01/04/22 | 12 — |
| Temp at receipt _____ deg. C. | RELINQUISHED BY | | Bruce McMullin | Spectra | 01/04/22 | 1 PM |
| Received within hold time? _____ | RECEIVED BY | | Dmitri L | ARI | 1/4/22 | 1320 |
| Proper sample containers? _____ | RELINQUISHED BY | | | | | |
| Received via _____ Cooler? ____ | RECEIVED BY | | | | | |

Payment Terms; Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue.

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

**ANALYTICAL REPORT FOR SAMPLES**

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 110626-1 | 22A0045-01 | Water | 23-Nov-2021 11:00 | 04-Jan-2022 13:00 |
| 110626-2 | 22A0045-02 | Water | 23-Nov-2021 11:20 | 04-Jan-2022 13:00 |

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

# Work Order Case Narrative

**Client:** Spectra Laboratories
**Project:** VOCs solids and waters
**Work Order:** 22A0045

## Sample receipt

Samples as listed on the preceding page were received 04-Jan-2022 13:00 under ARI work order 22A0045. For details regarding sample receipt, please refer to the Cooler Receipt Form.

## Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed outside the recommended holding times. The holding time was exceeded upon sample receipt. Data has been flagged with "H" qualifiers.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

## Volatiles - EPA Method SW8260D

The sample(s) were analyzed outside the recommended holding times. The holding time was exceeded upon sample receipt. Data has been flagged with "H" qualifiers.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

# Cooler Receipt Form

ARI Client: Spectrum | Project Name: 2021 110626

COC No(s): (NA) | Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: 22A0045 | Tracking No: (NA)

**Preliminary Examination Phase:**

| | | |
|---|---|---|
| Were intact, properly signed and dated custody seals attached to the outside of the cooler? | YES | (NO) |
| Were custody papers included with the cooler? | (YES) | NO |
| Were custody papers properly filled out (ink, signed, etc.) | (YES) | NO |

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1325 | 1.6.3 -6.4

If cooler temperature is out of compliance fill out form 00070F | Temp Gun ID#: D00256?

Cooler Accepted by: DL | Date: 1/4/22 | Time: 1300

***Complete custody forms and attach all shipping documents***

## Log-In Phase:

| | | | |
|---|---|---|---|
| Was a temperature blank included in the cooler? | | YES | (NO) |
| What kind of packing material was used? ... | Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: | | |
| Was sufficient ice used (if appropriate)? | NA | (YES) | NO |
| How were bottles sealed in plastic bags? | Individually | Grouped | (Not) |
| Did all bottles arrive in good condition (unbroken)? | | (YES) | NO |
| Were all bottle labels complete and legible? | | (YES) | NO |
| Did the number of containers listed on COC match with the number of containers received? | | (YES) | NO |
| Did all bottle labels and tags agree with custody papers? | | (YES) | NO |
| Were all bottles used correct for the requested analyses? | | (YES) | NO |
| Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... | (NA) | YES | NO |
| Were all VOC vials free of air bubbles? | NA | (YES) | NO |
| Was sufficient amount of sample sent in each bottle? | | (YES) | NO |
| Date VOC Trip Blank was made at ARI | (NA) | | |

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: AP | Date: 01/04/22 | Time: 1428 | Labels checked by: _____

***** Notify Project Manager of discrepancies or concerns *****

| Sample ID on Bottle | Sample ID on COC | Sample ID on Bottle | Sample ID on COC |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

***Additional Notes, Discrepancies, & Resolutions:***

By: Date:

Analytical Resources, LLC
Analytical Chemists and Consultants

# Cooler Temperature Compliance Form

**ARI Work Order:** 22A0045

**Cooler#:** _____ **Temperature(°C):** 16.3

| Sample ID | Bottle Count | Bottle Type |
|---|---|---|
| Samples Received Above 6°C | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**Cooler#:** _____ **Temperature(°C):** _____

| Sample ID | Bottle Count | Bottle Type |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**Cooler#:** _____ **Temperature(°C):** _____

| Sample ID | Bottle Count | Bottle Type |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**Cooler#:** _____ **Temperature(°C):** _____

| Sample ID | Bottle Count | Bottle Type |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Completed by: DC Date: 1/4/22 Time: 1300

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

**110626-1**

**22A0045-01 (Water)**

## Volatile Organic Compounds

Method: EPA 8260D — Sampled: 11/23/2021 11:00

Instrument: NT2 Analyst: PKC — Analyzed: 01/04/2022 17:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22A0045-01 A

Preparation Batch: BKA0043 — Sample Size: 10 mL

Prepared: 01/04/2022 — Final Volume: 10 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|---|
| Benzene | 71-43-2 | 1 | 0.05 | 0.20 | ND | ug/L | U, H |
| Toluene | 108-88-3 | 1 | 0.05 | 0.20 | 0.06 | ug/L | H, J |
| Ethylbenzene | 100-41-4 | 1 | 0.05 | 0.20 | ND | ug/L | U, H |
| m,p-Xylene | 179601-23-1 | 1 | 0.14 | 0.40 | ND | ug/L | U, H |
| o-Xylene | 95-47-6 | 1 | 0.08 | 0.20 | ND | ug/L | U, H |
| Xylenes, total | 1330-20-7 | 1 | 0.22 | 0.60 | ND | ug/L | U, H |
| *Surrogate: Toluene-d8* | | | | *80-120 %* | *99.4* | *%* | H |
| *Surrogate: 4-Bromofluorobenzene* | | | | *80-120 %* | *91.7* | *%* | H |

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

**110626-1**

**22A0045-01 (Water)**

## Volatile Organic Compounds

Method: NWTPHg — Sampled: 11/23/2021 11:00

Instrument: NT2 Analyst: PKC — Analyzed: 01/04/2022 17:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22A0045-01 A

Preparation Batch: BKA0043 — Sample Size: 10 mL

Prepared: 01/04/2022 — Final Volume: 10 mL

| Analyte | CAS Number | Dilution | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|
| Gasoline Range Organics (Tol-Nap) | GRO | 1 | 100 | ND | ug/L | U, H |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *99.4* | % | H |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *91.7* | % | H |

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

**110626-2**

**22A0045-02 (Water)**

## Volatile Organic Compounds

Method: EPA 8260D — Sampled: 11/23/2021 11:20

Instrument: NT2 Analyst: PKC — Analyzed: 01/04/2022 17:26

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22A0045-02 B

Preparation Batch: BKA0043 — Sample Size: 10 mL

Prepared: 01/04/2022 — Final Volume: 10 mL

| Analyte | CAS Number | Dilution | Detection Limit | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|---|
| Benzene | 71-43-2 | 1 | 0.05 | 0.20 | ND | ug/L | U, H |
| Toluene | 108-88-3 | 1 | 0.05 | 0.20 | 0.07 | ug/L | H, J |
| Ethylbenzene | 100-41-4 | 1 | 0.05 | 0.20 | ND | ug/L | U, H |
| m,p-Xylene | 179601-23-1 | 1 | 0.14 | 0.40 | ND | ug/L | U, H |
| o-Xylene | 95-47-6 | 1 | 0.08 | 0.20 | ND | ug/L | U, H |
| Xylenes, total | 1330-20-7 | 1 | 0.22 | 0.60 | ND | ug/L | U, H |
| *Surrogate: Toluene-d8* | | | | *80-120 %* | *99.8* | *%* | H |
| *Surrogate: 4-Bromofluorobenzene* | | | | *80-120 %* | *90.6* | *%* | H |

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

**110626-2**

**22A0045-02 (Water)**

## Volatile Organic Compounds

Method: NWTPHg — Sampled: 11/23/2021 11:20

Instrument: NT2 Analyst: PKC — Analyzed: 01/04/2022 17:26

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22A0045-02 B

Preparation Batch: BKA0043 — Sample Size: 10 mL

Prepared: 01/04/2022 — Final Volume: 10 mL

| Analyte | CAS Number | Dilution | Reporting Limit | Result | Units | Notes |
|---|---|---|---|---|---|---|
| Gasoline Range Organics (Tol-Nap) | GRO | 1 | 100 | ND | ug/L | U, H |
| *Surrogate: Toluene-d8* | | | *80-120 %* | *99.8* | % | H |
| *Surrogate: 4-Bromofluorobenzene* | | | *80-120 %* | *90.6* | % | H |

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKA0043 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

| QC Sample/Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (BKA0043-BLK1)** | | | | Prepared: 04-Jan-2022 Analyzed: 04-Jan-2022 12:25 | | | | | | | |
| Benzene | ND | 0.05 | 0.20 | ug/L | | | | | | | U |
| Toluene | ND | 0.05 | 0.20 | ug/L | | | | | | | U |
| Ethylbenzene | ND | 0.05 | 0.20 | ug/L | | | | | | | U |
| m,p-Xylene | ND | 0.14 | 0.40 | ug/L | | | | | | | U |
| o-Xylene | ND | 0.08 | 0.20 | ug/L | | | | | | | U |
| Xylenes, total | ND | 0.22 | 0.60 | ug/L | | | | | | | U |
| *Surrogate: Toluene-d8* | 4.97 | | | ug/L | *5.00* | | *99.4* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 4.76 | | | ug/L | *5.00* | | *95.3* | *80-120* | | | |
| **Blank (BKA0043-BLK2)** | | | | Prepared: 04-Jan-2022 Analyzed: 04-Jan-2022 12:25 | | | | | | | |
| Gasoline Range Organics (Tol-Nap) | ND | | 100 | ug/L | | | | | | | U |
| *Surrogate: Toluene-d8* | 4.97 | | | ug/L | *5.00* | | *99.4* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 4.76 | | | ug/L | *5.00* | | *95.3* | *80-120* | | | |
| **LCS (BKA0043-BS1)** | | | | Prepared: 04-Jan-2022 Analyzed: 04-Jan-2022 10:17 | | | | | | | |
| Benzene | 10.0 | 0.05 | 0.20 | ug/L | 10.0 | | 100 | 80-120 | | | |
| Toluene | 10.0 | 0.05 | 0.20 | ug/L | 10.0 | | 100 | 80-120 | | | |
| Ethylbenzene | 9.84 | 0.05 | 0.20 | ug/L | 10.0 | | 98.4 | 80-120 | | | |
| m,p-Xylene | 19.8 | 0.14 | 0.40 | ug/L | 20.0 | | 98.8 | 80-121 | | | |
| o-Xylene | 9.99 | 0.08 | 0.20 | ug/L | 10.0 | | 99.9 | 80-121 | | | |
| Xylenes, total | 29.7 | 0.22 | 0.60 | ug/L | 30.0 | | 99.2 | 76-127 | | | |
| *Surrogate: Toluene-d8* | 5.01 | | | ug/L | *5.00* | | *100* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 5.07 | | | ug/L | *5.00* | | *101* | *80-120* | | | |
| **LCS (BKA0043-BS2)** | | | | Prepared: 04-Jan-2022 Analyzed: 04-Jan-2022 09:56 | | | | | | | |
| Gasoline Range Organics (Tol-Nap) | 1050 | | 100 | ug/L | 1000 | | 105 | 72-128 | | | |
| *Surrogate: Toluene-d8* | 5.07 | | | ug/L | *5.00* | | *101* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 4.95 | | | ug/L | *5.00* | | *99.0* | *80-120* | | | |
| **LCS Dup (BKA0043-BSD1)** | | | | Prepared: 04-Jan-2022 Analyzed: 04-Jan-2022 11:01 | | | | | | | |
| Benzene | 10.3 | 0.05 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 3.20 | 30 | |
| Toluene | 10.4 | 0.05 | 0.20 | ug/L | 10.0 | | 104 | 80-120 | 3.47 | 30 | |
| Ethylbenzene | 10.3 | 0.05 | 0.20 | ug/L | 10.0 | | 103 | 80-120 | 4.67 | 30 | |
| m,p-Xylene | 20.8 | 0.14 | 0.40 | ug/L | 20.0 | | 104 | 80-121 | 5.07 | 30 | |

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

**Analysis by: Analytical Resources, LLC**

## Volatile Organic Compounds - Quality Control

### Batch BKA0043 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

| QC Sample/Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LCS Dup (BKA0043-BSD1)** | | | | Prepared: 04-Jan-2022 Analyzed: 04-Jan-2022 11:01 | | | | | | | |
| o-Xylene | 10.4 | 0.08 | 0.20 | ug/L | 10.0 | | 104 | 80-121 | 4.23 | 30 | |
| Xylenes, total | 31.2 | 0.22 | 0.60 | ug/L | 30.0 | | 104 | 76-127 | 4.79 | 30 | |
| *Surrogate: Toluene-d8* | 5.06 | | | ug/L | *5.00* | | *101* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 5.00 | | | ug/L | *5.00* | | *100* | *80-120* | | | |
| **LCS Dup (BKA0043-BSD2)** | | | | Prepared: 04-Jan-2022 Analyzed: 04-Jan-2022 10:39 | | | | | | | |
| Gasoline Range Organics (Tol-Nap) | 1160 | | 100 | ug/L | 1000 | | 116 | 72-128 | 10.10 | 30 | |
| *Surrogate: Toluene-d8* | 5.11 | | | ug/L | *5.00* | | *102* | *80-120* | | | |
| *Surrogate: 4-Bromofluorobenzene* | 4.91 | | | ug/L | *5.00* | | *98.3* | *80-120* | | | |

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

## Certified Analyses included in this Report

| Analyte | Certifications |
|---|---|
| ***EPA 8260D in Water*** | |
| Chloromethane | DoD-ELAP,ADEC,NELAP,WADOE |
| Vinyl Chloride | DoD-ELAP,ADEC,NELAP,WADOE |
| Bromomethane | DoD-ELAP,ADEC,NELAP,WADOE |
| Chloroethane | DoD-ELAP,ADEC,NELAP,WADOE |
| Trichlorofluoromethane | DoD-ELAP,ADEC,NELAP,WADOE |
| Acrolein | DoD-ELAP,NELAP,WADOE |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | DoD-ELAP,ADEC,NELAP,WADOE |
| Acetone | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,1-Dichloroethene | DoD-ELAP,ADEC,NELAP,WADOE |
| Iodomethane | DoD-ELAP,NELAP,WADOE |
| Methylene Chloride | DoD-ELAP,ADEC,NELAP,WADOE |
| Acrylonitrile | DoD-ELAP,NELAP,WADOE |
| Carbon Disulfide | DoD-ELAP,NELAP,WADOE |
| trans-1,2-Dichloroethene | DoD-ELAP,ADEC,NELAP,WADOE |
| Vinyl Acetate | DoD-ELAP,NELAP,WADOE |
| 1,1-Dichloroethane | DoD-ELAP,ADEC,NELAP,WADOE |
| 2-Butanone | DoD-ELAP,NELAP,WADOE |
| 2,2-Dichloropropane | DoD-ELAP,ADEC,NELAP,WADOE |
| cis-1,2-Dichloroethene | DoD-ELAP,ADEC,NELAP,WADOE |
| Chloroform | DoD-ELAP,ADEC,NELAP,WADOE |
| Bromochloromethane | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,1,1-Trichloroethane | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,1-Dichloropropene | DoD-ELAP,ADEC,NELAP,WADOE |
| Carbon tetrachloride | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,2-Dichloroethane | DoD-ELAP,ADEC,NELAP,WADOE |
| Benzene | DoD-ELAP,ADEC,NELAP,WADOE |
| Trichloroethene | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,2-Dichloropropane | DoD-ELAP,ADEC,NELAP,WADOE |
| Bromodichloromethane | DoD-ELAP,ADEC,NELAP,WADOE |
| Dibromomethane | DoD-ELAP,ADEC,NELAP,WADOE |
| 2-Chloroethyl vinyl ether | DoD-ELAP,ADEC,NELAP,WADOE |
| 4-Methyl-2-Pentanone | DoD-ELAP,NELAP,WADOE |
| cis-1,3-Dichloropropene | DoD-ELAP,ADEC,NELAP,WADOE |
| Toluene | DoD-ELAP,ADEC,NELAP,WADOE |
| trans-1,3-Dichloropropene | DoD-ELAP,ADEC,NELAP,WADOE |

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

| | |
|---|---|
| 2-Hexanone | DoD-ELAP,NELAP,WADOE |
| 1,1,2-Trichloroethane | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,3-Dichloropropane | DoD-ELAP,ADEC,NELAP,WADOE |
| Tetrachloroethene | DoD-ELAP,ADEC,NELAP,WADOE |
| Dibromochloromethane | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,2-Dibromoethane | DoD-ELAP,NELAP,WADOE |
| Chlorobenzene | DoD-ELAP,ADEC,NELAP,WADOE |
| Ethylbenzene | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,1,1,2-Tetrachloroethane | DoD-ELAP,ADEC,NELAP,WADOE |
| m,p-Xylene | DoD-ELAP,ADEC,NELAP,WADOE |
| o-Xylene | DoD-ELAP,ADEC,NELAP,WADOE |
| Styrene | DoD-ELAP,NELAP,WADOE |
| Bromoform | DoD-ELAP,NELAP,WADOE |
| 1,1,2,2-Tetrachloroethane | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,2,3-Trichloropropane | DoD-ELAP,ADEC,NELAP,WADOE |
| trans-1,4-Dichloro 2-Butene | DoD-ELAP,ADEC,NELAP,WADOE |
| n-Propylbenzene | DoD-ELAP,NELAP,WADOE |
| Bromobenzene | DoD-ELAP,NELAP,WADOE |
| Isopropyl Benzene | DoD-ELAP,NELAP,WADOE |
| 2-Chlorotoluene | DoD-ELAP,ADEC,NELAP,WADOE |
| 4-Chlorotoluene | DoD-ELAP,ADEC,NELAP,WADOE |
| t-Butylbenzene | DoD-ELAP,NELAP,WADOE |
| 1,3,5-Trimethylbenzene | DoD-ELAP,NELAP,WADOE |
| 1,2,4-Trimethylbenzene | DoD-ELAP,NELAP,WADOE |
| s-Butylbenzene | DoD-ELAP,NELAP,WADOE |
| 4-Isopropyl Toluene | DoD-ELAP,NELAP,WADOE |
| 1,3-Dichlorobenzene | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,4-Dichlorobenzene | DoD-ELAP,ADEC,NELAP,WADOE |
| n-Butylbenzene | DoD-ELAP,NELAP,WADOE |
| 1,2-Dichlorobenzene | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,2-Dibromo-3-chloropropane | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,2,4-Trichlorobenzene | DoD-ELAP,ADEC,NELAP,WADOE |
| Hexachloro-1,3-Butadiene | DoD-ELAP,ADEC,NELAP,WADOE |
| Naphthalene | DoD-ELAP,ADEC,NELAP,WADOE |
| 1,2,3-Trichlorobenzene | DoD-ELAP,ADEC,NELAP,WADOE |
| Dichlorodifluoromethane | DoD-ELAP,ADEC,NELAP,WADOE |
| Methyl tert-butyl Ether | DoD-ELAP,ADEC,NELAP,WADOE |
| n-Hexane | WADOE |
| 2-Pentanone | WADOE |

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

***NWTPHg in Water***

| | |
|---|---|
| Gasoline Range Organics (Tol-Nap) | WADOE,DoD-ELAP |
| Gasoline Range Organics (2MP-TMB) | WADOE,DoD-ELAP |
| Gasoline Range Organics (Tol-C12) | WADOE,DoD-ELAP |
| Gasoline Range Organics (C6-C10) | WADOE,ADEC,DoD-ELAP |
| Gasoline Range Organics (C5-C12) | WADOE,DoD-ELAP |

| Code | Description | Number | Expires |
|---|---|---|---|
| ADEC | Alaska Dept of Environmental Conservation | 17-015 | 03/28/2023 |
| DoD-ELAP | DoD-Environmental Laboratory Accreditation Program | 66169 | 02/28/2022 |
| NELAP | ORELAP - Oregon Laboratory Accreditation Program | WA100006-012 | 05/12/2022 |
| WADOE | WA Dept of Ecology | C558 | 06/30/2022 |
| WA-DW | Ecology - Drinking Water | C558 | 06/30/2022 |

| | | |
|---|---|---|
| Spectra Laboratories | Project: VOCs solids and waters | |
| 2221 Ross Way | Project Number: 2021110626 | **Reported:** |
| Tacoma WA, 98421 | Project Manager: Spencer Beck | 05-Jan-2022 11:17 |

## Notes and Definitions

| | |
|---|---|
| * | Flagged value is not within established control limits. |
| E | The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL) |
| H | Hold time violation - Hold time was exceeded. |
| J | Estimated concentration value detected below the reporting limit. |
| Q | Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF) |
| U | This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |
| [2C] | Indicates this result was quantified on the second column on a dual column analysis. |

**SPECTRA Laboratories**
2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:
*As, Cr, Pb, Cd, Cu, Ni, Zn by 200.8
Mercury by 245.1
** Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Indeno(1, 2, 3, -Cd)pyrene, Pyrene
Return Samples Y ___ N X Page 1 of 1

# CHAIN of CUSTODY

SPECTRA PROJECT # 20211106246

STANDARD [X] RUSH [ ]

CLIENT: Tacoma Power - Natural Resources ADDRESS: 3628 S 35th Tacoma, WA 98409 ADDRESS CHANGE [ ]

PROJECT: Kosmos Oil Clean Up
CONTACT: Matt Peter and Ben Caviness
SAMPLED BY: Ben Caviness
PHONE: Ben 253-222-6691 & Matt 253-208-2014
e-MAIL: bcaviness2@cityoftacoma.org Prefer FAX [ ]
mpeter@cityoftacoma.org or e-MAIL [ ]
PURCHASE ORDER #: Contact Matt for credit card

| | SAMPLE ID | DATE SAMPLED | TIME SAMPLED | MATRIX | NUMBER OF CONTAINERS | HYDROCARBONS: NWTPH-HCID | BTEX | BTEX/NWTPH-G | NWTPH-G | NWTPH-Dx | 1664 SGT-HEM (TPH) | 1664 HEM (FOG) | ORGANICS: 8260/624 VOA | 8260 CHLOR SOLVENTS | 8270/625 Semi VOA ** | 8270 PAH/PNA | 8082/608 PCB | METALS: TOTAL METALS RCRA 8 | TOTAL METALS (SPECIFY) * | Hex Chrom | TCLP METALS RCRA 8 | TCLP METALS (SPECIFY) | OTHER: PH 9040/9045 | TX/TOX 9076 | TURBIDITY | FLASH POINT | BOD | SOLIDS (SPECIFY) | Hardness |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20211123_Stockpile | 11/23 | 11:00 | Water | 7 | | | X | | X | | | | | X | | | | X | X | | | | | | | | | X |
| 2 | 20211123_Conveyance_Outlet | 11/23 | 11:20 | Water | 7 | | | X | | X | | | | | X | | | | X | X | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Hex chrome out of hold AL

T=4.9°C

| | SIGNATURE | PRINTED NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| RELINQUISHED BY | | Benjamin Caviness | Tacoma Power | 11/23/21 | 16:25 |
| RECEIVED BY | | T. Burkhart | Spectra | 11.23.21 | 1624 |
| RELINQUISHED BY | | | | | |
| RECEIVED BY | | | | | |

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable

STORMWATER SOLIDWASTE WASTEWATER
ENVIRONMENTAL SERVICES DEPARTMENT

22 February 2022

Matt Peter
Tacoma Public Utilities
3628 S 35th St
Tacoma, WA 98409

Subject: Kosmos

**REVISED REPORT: This revision replaces the report originally issued 02/04/2022.**

Enclosed are the analytical results for samples collected 01/31/2022.

Although pH and TSS are listed on the chain of custody and the analyses were performed, these results are not included in this revised report since they are not required by for project.

Quality Control Data are included with the sample results for your review.

If you have any questions concerning this report, call me at (253)502-2130. Please note that remaining samples associated with this report will be discarded **3 months** from the date of this report unless we are notified otherwise.

Sincerely,

DocuSigned by:
Stuart Magoon
F41AFFAA30F64EB...

Stuart Magoon
Assistant Division Manager
Environmental Services Laboratory

cc.

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|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 22-Feb-22 16:52 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled |
|---|---|---|---|
| **Sample 1 SHI-22** | 2201106-01 | Water | 31-Jan-22 12:00 |
| **Trip Blank** | 2201106-05 | Water | 31-Jan-22 14:45 |

## CHAIN OF CUSTODY, SAMPLE RECEIPT, PRESERVATION AND STORAGE

Samples were received under appropriate Chain of Custody procedures. Containers were properly preserved and stored in accordance with the applicable method requirements.

## HOLDING TIMES

All analyses were performed within the required holding times.

## METHODS

The samples were analyzed by the following methods:

EPA Method 200.8 for Total Metals
EPA Method 625.1 for Semi-volatile Organic Analysis (SVOA) Base Neutral Acids (BNA)
EPA Method 8260D for Volatile Organic Analysis (VOA) Benzene+Toluene+Xylenes (BTEX)
Washington Department of Ecology NWTPH-Dx and -Gx, 1997 for Diesel Range and Gasoline Range Hydrocarbons

## MINIMUM REPORTING LIMITS

Analytes are reported to the Method Detection Limit (MDL). Values below the Practical Quantitation Limit (PQL) or Reporting Limit (RL) are qualified as estimated (J) and may not be as accurate as values reported greater than the PQL (the low standard or 3 - 5 times the MDL) or RL.

## BLANKS

Blanks were analyzed at the required frequencies of the methods. Analytes were not detected in the blanks, sample concentrations were greater than 10 times the blank values, or the analytes detected in the blanks were not detected in associated samples with the exception of the NWTPH-Dx method which had a measurable Diesel Range Hydrocarbon hit in the Heavy Oil range. Therefore, affected sample result for Diesel Range Hydrocarbons is reported as not detected at or above the associated estimated value (UJ).

## SURROGATE COMPOUNDS

Surrogate compounds were added to each sample to monitor system performance for SVOA and VOA analyses. Surrogate recoveries were within the laboratory's limits or above control limits with associated targets not detected in affected samples with the exception of 2-Fluorobiphenyl in sample 2201106-01. Therefore, associated Diesel Range Hydrocarbon result is reported as not detected at or above the associated estimated value (UJ).

## LABORATORY CONTROL SAMPLES

Laboratory Control Samples were analyzed with these samples. The recoveries were within the laboratory limits.

## DUPLICATE SAMPLE ANALYSIS

Duplicate analysis was performed with these samples. Relative percent differences were within the laboratory limits.

## MATRIX SPIKE AND MATRIX SPIKE DUPLICATE ANALYSIS

Matrix Spike and/or Matrix Spike Duplicate analysis was performed with these samples. The recoveries were within the laboratory limits, or above control limits with affected targets not detected in the associated source sample.

## INTERNAL STANDARDS

Internal Standards were added to these samples to monitor instrument performance related to calibration drift of matrix interference in the metals analysis by ICP-MS. Internal Standards were also added to the samples for SVOA analyses. The retention times of the standards in the samples must be within one-half minute of the retention times for the standards in the continuing calibration and the area recoveries of the standards in the samples must be within 50 to 200% of the area of the standards in the continuing calibrations. All Internal Standards associated with reported results met the method criteria.

## DATA AVAILABILITY

All data associated with the samples referenced in this report are archived at the Environmental Services Laboratory and are available upon request.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and project QAPP.

DocuSigned by:
Eric Bitten
AFC6C85C32CB4C8...

Reviewed By

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 22-Feb-22 16:52 |

## Sample 1 SHI-22

**2201106-01 (Water)**

**31-Jan-22 12:00**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| EPA 200.8_5.4_1994 | Prepared: 02-Feb-22 | Analyzed: 03-Feb-22 | | | |
| **Arsenic** | **0.279** | **J** | 0.500 | 0.161 | ug/L |
| Cadmium | 0.100 | U | 0.500 | 0.100 | ug/L |
| Chromium | 1.54 | U | 1.54 | 1.54 | ug/L |
| **Copper** | **8.79** | | 0.800 | 0.800 | ug/L |
| **Lead** | **0.971** | | 0.500 | 0.102 | ug/L |
| **Nickel** | **0.720** | | 0.500 | 0.429 | ug/L |
| **Zinc** | **13.3** | | 5.00 | 1.68 | ug/L |
| **Semi-VOA** | | | | | |
| EPA 625.1 | Prepared: 01-Feb-22 | Analyzed: 02-Feb-22 | | | |
| Benzo(a)anthracene | 0.2 | U | 1.0 | 0.2 | ug/L |
| Benzo(a)pyrene | 0.2 | U | 1.0 | 0.2 | ug/L |
| Benzo(b)fluoranthene | 0.3 | U | 1.0 | 0.3 | ug/L |
| Benzo(k)fluoranthene | 0.2 | U | 1.0 | 0.2 | ug/L |
| Chrysene | 0.2 | U | 1.0 | 0.2 | ug/L |
| Indeno(1,2,3-cd)pyrene | 0.6 | U | 1.0 | 0.6 | ug/L |
| Pyrene | 0.2 | U | 1.0 | 0.2 | ug/L |
| *Surrogate: Terphenyl-d14* | *80 %* | | *18.3-152* | | |

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| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 22-Feb-22 16:52 |

## Sample 1 SHI-22

**2201106-01RE1 (Water)**

**31-Jan-22 12:00**

| Analyte | Result | PQL | MDL | Units |
|---|---|---|---|---|
| **VOA** | | | | |
| EPA 8260D_4_(6/18) Prepared: 02-Feb-22 | Analyzed: 02-Feb-22 | | | |
| Benzene | 0.2 U | 0.5 | 0.2 | ug/L |
| BTEX (total) | 1.2 U | 3.0 | 1.2 | ug/L |
| Ethylbenzene | 0.2 U | 0.5 | 0.2 | ug/L |
| m,p-Xylene | 0.4 U | 1.0 | 0.4 | ug/L |
| o-Xylene | 0.2 U | 0.5 | 0.2 | ug/L |
| Toluene | 0.2 U | 0.5 | 0.2 | ug/L |
| *Surrogate: 1,2-Dichloroethane-d4* | *93 %* | *26-175* | | |
| *Surrogate: 4-Bromofluorobenzene* | *106 %* | *81-130* | | |
| *Surrogate: Fluorobenzene* | *95 %* | *82-127* | | |
| *Surrogate: Toluene-d8* | *100 %* | *86-126* | | |
| WDOE NWTPH-Gx_(1997) Prepared: 02-Feb-22 | Analyzed: 02-Feb-22 | | | |
| **Gasoline Range Hydrocarbons** | **8.17 J** | 50.0 | 4.68 | ug/L |
| *Surrogate: 4-Bromofluorobenzene* | *106 %* | *50-150* | | |

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| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 22-Feb-22 16:52 |

## Sample 1 SHI-22

**2201106-01RE2 (Water)**

**31-Jan-22 12:00**

| Analyte | Result | PQL | MDL | Units |
|---|---|---|---|---|
| **Semi-VOA** | | | | |
| WDOE NWTPH-Dx_(1997) Prepared: 02-Feb-22 Analyzed: 08-Feb-22 | | | | |
| **Diesel Range Hydrocarbons** | **240 UJ** | 220 | | ug/L |
| *Surrogate: 2-Fluorobiphenyl* | *32.0 %* | *50-150* | | |
| *Surrogate: Pentacosane* | *55.6 %* | *50-150* | | |
| *Surrogate: Terphenyl-d14* | *54.4 %* | *50-150* | | |

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| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 22-Feb-22 16:52 |

## Trip Blank

**2201106-05 (Water)**

**31-Jan-22 14:45**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **VOA** | | | | | |
| EPA 8260D_4_(6/18) | Prepared: 02-Feb-22 | Analyzed: 02-Feb-22 | | | |
| Benzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| BTEX (total) | 1.2 U | | 3.0 | 1.2 | ug/L |
| Ethylbenzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| m,p-Xylene | 0.4 U | | 1.0 | 0.4 | ug/L |
| o-Xylene | 0.2 U | | 0.5 | 0.2 | ug/L |
| Toluene | 0.2 U | | 0.5 | 0.2 | ug/L |
| *Surrogate: 1,2-Dichloroethane-d4* | | *92 %* | *26-175* | | |
| *Surrogate: 4-Bromofluorobenzene* | | *100 %* | *81-130* | | |
| *Surrogate: Fluorobenzene* | | *95 %* | *82-127* | | |
| *Surrogate: Toluene-d8* | | *99 %* | *86-126* | | |

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| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 22-Feb-22 16:52 |

## Metals - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0003 - EPA 200.8_5.4_1994** | | | | | | | | | |
| **Blank (BFB0003-BLK1)** | | | | Prepared: 02-Feb-22 Analyzed: 03-Feb-22 | | | | | |
| **BFB0003-BLK1** | | | | | | | | | |
| **Arsenic** | **0.161 U** | **0.161** | **ug/L** | | | | | | |
| **Cadmium** | **0.100 U** | **0.100** | **ug/L** | | | | | | |
| **Chromium** | **1.54 U** | **1.54** | **ug/L** | | | | | | |
| **Copper** | **0.800 U** | **0.800** | **ug/L** | | | | | | |
| **Lead** | **0.102 U** | **0.102** | **ug/L** | | | | | | |
| **Nickel** | **0.429 U** | **0.429** | **ug/L** | | | | | | |
| **Zinc** | **1.68 U** | **1.68** | **ug/L** | | | | | | |
| **Duplicate (BFB0003-DUP1)** | **Source: 2201106-01** | | | Prepared: 02-Feb-22 Analyzed: 03-Feb-22 | | | | | |
| **BFB0003-DUP1** | | | | | | | | | |
| **Arsenic** | **0.229 J** | **0.161** | **ug/L** | | **0.279** | | | **20** | **20** |
| **Cadmium** | **0.100 U** | **0.100** | **ug/L** | | **ND** | | | | **20** |
| **Chromium** | **1.54 U** | **1.54** | **ug/L** | | **ND** | | | | **20** |
| **Copper** | **7.23** | **0.800** | **ug/L** | | **8.79** | | | **19** | **20** |
| **Lead** | **0.837** | **0.102** | **ug/L** | | **0.971** | | | **15** | **20** |
| **Nickel** | **0.636** | **0.429** | **ug/L** | | **0.720** | | | **12** | **20** |
| **Zinc** | **10.3** | **1.68** | **ug/L** | | **13.3** | | | **26** | **20** |
| **LCS (BFB0003-BS1)** | | | | Prepared: 02-Feb-22 Analyzed: 03-Feb-22 | | | | | |
| **BFB0003-BS1** | | | | | | | | | |
| **Arsenic** | **101** | **0.161** | **ug/L** | **100** | | **101** | **85-115** | | **200** |
| **Cadmium** | **40.1** | **0.100** | **ug/L** | **40.0** | | **100** | **85-115** | | **200** |
| **Chromium** | **103** | **1.54** | **ug/L** | **100** | | **103** | **85-115** | | **200** |
| **Copper** | **104** | **0.800** | **ug/L** | **100** | | **104** | **85-115** | | **200** |
| **Lead** | **99.3** | **0.102** | **ug/L** | **100** | | **99** | **85-115** | | **200** |
| **Nickel** | **104** | **0.429** | **ug/L** | **100** | | **104** | **85-115** | | **200** |
| **Zinc** | **105** | **1.68** | **ug/L** | **100** | | **105** | **85-115** | | **200** |
| **Matrix Spike (BFB0003-MS1)** | **Source: 2201106-01** | | | Prepared: 02-Feb-22 Analyzed: 03-Feb-22 | | | | | |
| **BFB0003-MS1** | | | | | | | | | |
| **Arsenic** | **411** | **0.161** | **ug/L** | **400** | **0.279** | **103** | **70-130** | | **200** |
| **Cadmium** | **398** | **0.100** | **ug/L** | **400** | **ND** | **99** | **70-130** | | **200** |
| **Chromium** | **439** | **1.54** | **ug/L** | **400** | **ND** | **110** | **70-130** | | **200** |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 22-Feb-22 16:52 |

## Metals - Quality Control

## Environmental Services Laboratory

| Sample ID<br>Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0003 - EPA 200.8_5.4_1994** | | | | | | | | | |
| **Copper** | **498** | **0.800** | **ug/L** | **400** | **8.79** | **122** | **70-130** | | **200** |
| **Lead** | **402** | **0.102** | **ug/L** | **400** | **0.971** | **100** | **70-130** | | **200** |
| **Nickel** | **417** | **0.429** | **ug/L** | **400** | **0.720** | **104** | **70-130** | | **200** |
| **Zinc** | **425** | **1.68** | **ug/L** | **400** | **13.3** | **103** | **70-130** | | **200** |
| **MRL Check (BFB0003-MRL1)** | | | | Prepared: 02-Feb-22 Analyzed: 03-Feb-22 | | | | | |
| **BFB0003-MRL1** | | | | | | | | | |
| **Arsenic** | **0.521** | **0.161** | **ug/L** | **0.500** | | **104** | **0-200** | | **20** |
| **Cadmium** | **0.512** | **0.100** | **ug/L** | **0.500** | | **102** | **0-200** | | **20** |
| **Chromium** | **0.528 J** | **0.500** | **ug/L** | **0.500** | | **106** | **0-200** | | **20** |
| **Copper** | **0.571 J** | **0.500** | **ug/L** | **0.500** | | **114** | **0-200** | | **20** |
| **Lead** | **0.503** | **0.500** | **ug/L** | **0.500** | | **101** | **0-200** | | **20** |
| **Nickel** | **0.522** | **0.500** | **ug/L** | **0.500** | | **104** | **0-200** | | **20** |
| **Zinc** | **0.77 J** | **0.50** | **ug/L** | **0.500** | | **154** | **0-200** | | **20** |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 22-Feb-22 16:52 |

## VOA - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0014 - EPA 8260D_4_(6/18)** | | | | | | | | | |
| **Blank (BFB0014-BLK1)** | | | | Prepared & Analyzed: 02-Feb-22 | | | | | |
| **BFB0014-BLK1** | | | | | | | | | |
| **Benzene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **NWTPH-Gasoline** | **4.68 U** | **4.68** | **ug/L** | | | | | | |
| **Toluene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Ethylbenzene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **m,p-Xylene** | **0.4 U** | **0.4** | **ug/L** | | | | | | |
| **o-Xylene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| *Surrogate: 4-Bromofluorobenzene* | *9.94* | | ug/L | *10.0* | | *99* | *81-130* | | |
| *Surrogate: 4-Bromofluorobenzene* | *9.9* | | ug/L | *10.0* | | *99.4* | *50-150* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *9.16* | | ug/L | *10.0* | | *92* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *9.09* | | ug/L | *10.0* | | *91* | *82-127* | | |
| *Surrogate: Toluene-d8* | *9.49* | | ug/L | *10.0* | | *95* | *86-126* | | |
| **Duplicate (BFB0014-DUP1)** | | **Source: 2201106-01RE1** | | Prepared & Analyzed: 02-Feb-22 | | | | | |
| **BFB0014-DUP1** | | | | | | | | | |
| *Surrogate: 4-Bromofluorobenzene* | *10.2* | | ug/L | *10.0* | | *102* | *81-130* | | |
| *Surrogate: 4-Bromofluorobenzene* | *10* | | ug/L | *10.0* | | *102* | *50-150* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *9.73* | | ug/L | *10.0* | | *97* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *9.54* | | ug/L | *10.0* | | *95* | *82-127* | | |
| *Surrogate: Toluene-d8* | *9.84* | | ug/L | *10.0* | | *98* | *86-126* | | |
| **LCS (BFB0014-BS1)** | | | | Prepared & Analyzed: 02-Feb-22 | | | | | |
| **BFB0014-BS1** | | | | | | | | | |
| **Benzene** | **6.0** | | **ug/L** | **5.00** | | **120** | **60.6-136** | | **20** |
| **Toluene** | **6.2** | | **ug/L** | **5.00** | | **124** | **62.8-131** | | **20** |
| **Ethylbenzene** | **5.9** | | **ug/L** | **5.00** | | **117** | **64.6-128** | | **20** |
| **m,p-Xylene** | **10.9** | | **ug/L** | **10.0** | | **109** | **61.1-135** | | **20** |
| **o-Xylene** | **5.6** | | **ug/L** | **5.00** | | **112** | **63.9-129** | | **20** |
| *Surrogate: 4-Bromofluorobenzene* | *10.1* | | ug/L | *10.0* | | *101* | *81-130* | | |
| *Surrogate: 4-Bromofluorobenzene* | *10* | | ug/L | *10.0* | | *101* | *50-150* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *10.2* | | ug/L | *10.0* | | *102* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *9.79* | | ug/L | *10.0* | | *98* | *82-127* | | |
| *Surrogate: Toluene-d8* | *10.0* | | ug/L | *10.0* | | *100* | *86-126* | | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

## VOA - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0014 - WDOE NWTPH-Gx_(1997)** | | | | | | | | | |
| **BFB0014-BS2** | | | | | | | | | |
| **NWTPH-Gasoline** | **84.6** | | **ug/L** | **100** | | **84.6** | **50-150** | | **200** |
| *Surrogate: 4-Bromofluorobenzene* | *9.8* | | ug/L | *10.0* | | *98.4* | *50-150* | | |
| *Surrogate: 4-Bromofluorobenzene* | *9.84* | | ug/L | *10.0* | | *98* | *81-130* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *9.38* | | ug/L | *10.0* | | *94* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *9.64* | | ug/L | *10.0* | | *96* | *82-127* | | |
| *Surrogate: Toluene-d8* | *9.77* | | ug/L | *10.0* | | *98* | *86-126* | | |
| **Matrix Spike (BFB0014-MS1)** | **Source: 2201106-01RE1** Prepared & Analyzed: 02-Feb-22 | | | | | | | | |
| **BFB0014-MS1** | | | | | | | | | |
| **Benzene** | **6.5** | | **ug/L** | **5.00** | **0.0** | **129** | **76.2-116** | | **20** |
| **Toluene** | **6.5** | | **ug/L** | **5.00** | **0.02** | **130** | **78.3-112** | | **20** |
| **Ethylbenzene** | **6.4** | | **ug/L** | **5.00** | **0.0** | **128** | **78.8-110** | | **20** |
| **m,p-Xylene** | **11.6** | | **ug/L** | **10.0** | **0.0** | **116** | **75.9-110** | | **20** |
| **o-Xylene** | **6.1** | | **ug/L** | **5.00** | **0.0** | **122** | **78.4-110** | | **20** |
| *Surrogate: 4-Bromofluorobenzene* | *10.2* | | ug/L | *10.0* | | *102* | *81-130* | | |
| *Surrogate: 4-Bromofluorobenzene* | *10* | | ug/L | *10.0* | | *102* | *50-150* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *9.92* | | ug/L | *10.0* | | *99* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *9.65* | | ug/L | *10.0* | | *96* | *82-127* | | |
| *Surrogate: Toluene-d8* | *9.89* | | ug/L | *10.0* | | *99* | *86-126* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 22-Feb-22 16:52 |

## Semi-VOA - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0006 - EPA 625.1** | | | | | | | | | |
| **Blank (BFB0006-BLK1)** | | | | Prepared: 01-Feb-22 Analyzed: 02-Feb-22 | | | | | |
| **BFB0006-BLK1** | | | | | | | | | |
| **Pyrene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Benzo(a)anthracene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Chrysene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Benzo(a)pyrene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Indeno(1,2,3-cd)pyrene** | **0.6 U** | **0.6** | **ug/L** | | | | | | |
| **Benzo(b)fluoranthene** | **0.3 U** | **0.3** | **ug/L** | | | | | | |
| **Benzo(k)fluoranthene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| *Surrogate: Terphenyl-d14* | *24* | | ug/L | *25.0* | | *96* | *18.3-152* | | |
| **LCS (BFB0006-BS1)** | | | | Prepared: 01-Feb-22 Analyzed: 02-Feb-22 | | | | | |
| **BFB0006-BS1** | | | | | | | | | |
| **Pyrene** | **20** | **0.2** | **ug/L** | **25.0** | | **78** | **52-120** | | **200** |
| **Benzo(a)anthracene** | **21** | **0.2** | **ug/L** | **25.0** | | **83** | **33-143** | | **200** |
| **Chrysene** | **20** | **0.2** | **ug/L** | **25.0** | | **80** | **17-168** | | **200** |
| **Benzo(a)pyrene** | **21** | **0.2** | **ug/L** | **25.0** | | **85** | **17-163** | | **200** |
| **Indeno(1,2,3-cd)pyrene** | **22** | **0.6** | **ug/L** | **25.0** | | **87** | **0.1-171** | | **200** |
| **Benzo(b)fluoranthene** | **22** | **0.3** | **ug/L** | **25.0** | | **89** | **24-159** | | **200** |
| **Benzo(k)fluoranthene** | **20** | **0.2** | **ug/L** | **25.0** | | **81** | **11-162** | | **200** |
| *Surrogate: Terphenyl-d14* | *21* | | ug/L | *25.0* | | *83* | *18.3-152* | | |
| **Batch BFB0013 - WDOE NWTPH-Dx_(1997)** | | | | | | | | | |
| **Blank (BFB0013-BLK1)** | | | | Prepared: 02-Feb-22 Analyzed: 03-Feb-22 | | | | | |
| **BFB0013-BLK1** | | | | | | | | | |
| **NWTPH-Diesel** | **100 U** | **100** | **ug/L** | | | | | | |
| **NWTPH-Heavy Oil** | **210** | **200** | **ug/L** | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | *27* | | ug/L | *50.0* | | *53.1* | *50-150* | | |
| *Surrogate: Terphenyl-d14* | *48* | | ug/L | *50.0* | | *95.2* | *50-150* | | |
| *Surrogate: Pentacosane* | *51* | | ug/L | *50.0* | | *102* | *50-150* | | |
| **BFB0013-BLK2** | | | | | | | | | |
| **NWTPH-Diesel** | **50 U** | **50** | **ug/L** | | | | | | |
| **NWTPH-Heavy Oil** | **100** | **100** | **ug/L** | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | *19* | | ug/L | *50.0* | | *37.3* | *50-150* | | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

## Semi-VOA - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0013 - WDOE NWTPH-Dx_(1997)** | | | | | | | | | |
| *Surrogate: Terphenyl-d14* | *33* | | ug/L | *50.0* | | *66.9* | *50-150* | | |
| *Surrogate: Pentacosane* | *33* | | ug/L | *50.0* | | *66.9* | *50-150* | | |
| **LCS (BFB0013-BS1)** | | | | Prepared: 02-Feb-22 Analyzed: 03-Feb-22 | | | | | |
| **BFB0013-BS1** | | | | | | | | | |
| **NWTPH-Diesel** | **310** | **100** | **ug/L** | **500** | | **61.4** | **50-150** | | **200** |
| **NWTPH-Heavy Oil** | **780** | **200** | **ug/L** | **1000** | | **77.7** | **50-150** | | **200** |
| *Surrogate: 2-Fluorobiphenyl* | *25* | | ug/L | *50.0* | | *50.4* | *50-150* | | |
| *Surrogate: Terphenyl-d14* | *38* | | ug/L | *50.0* | | *76.8* | *50-150* | | |
| *Surrogate: Pentacosane* | *56* | | ug/L | *50.0* | | *112* | *50-150* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 22-Feb-22 16:52 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte Not Detected at or above the associated value |
| UJ | Analyte Not Detected at or above the associated estimated value |
| J | The analyte was positively identified. The associated value is an estimate. For BOD Analysis: The sample dilutions set-up for the BOD analysis did not meet the oxygen depletion criteria of at least 2 mg/l dissolved oxygen depletion. Therefore the reported BOD result is estimated biased high |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| E | Analyte was determined above the upper quantitation range of the method. The associated value is an estimate. |
| NJ | There is evidence the analyte is present. The associated value is an estimate. |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |
| H | The sample dilutions set up for the BOD analysis failed to meet the criteria of a residual dissolved oxygen of at least 1 mg/l. Therefore actual concentration is likely greater than the reported result. |

# Chain of Custody

Tacoma
326 East D Street
Tacoma
WA, 98421-1801
phone (253) 502-2130
fax (253) 502-2170



Lab Work Order Number 2201106

| | |
|---|---|
| Client Name | Tacoma Power |
| Client Contact | Matt Peter |
| Address | 3628 S 35th St |
| City | Tacoma |
| State/Zip | WA, 98409 |
| Phone | 253-208-2814 |
| Fax | mpeter@cityoftacoma.org |
| Sampler | Ben Cavitness |
| Project Name | Kosmos |
| Project Number | |
| Project Description | |
| PO Number | |
| Sampler Signatures | |

Requested Analyses: Arsenic 200.8; Chromium Total 200.8; Copper Total 200.8; Lead Total 200.8; Nickel Total 200.8; pH_4500-H+B; Zinc Total 200.8; [illegible]; NWTPH_DX; NWTPH_G; VOA_624.1_BTEX; 8625.1_B/A; Solids, Total Sus. SM2540D; pH_4500-H; Sample Number

Requested Turn Around: Rush requests subject to additional charge. Rush requests subject to lab approval. Standard (days); Expedited (days); Due Date

| Sample Name or Field ID | Sampled Date | Sampled Time | Sample Type | Matrix Code | Container Count | Preservation Code | | | | | | | | | | Sample Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample 1 SH1-22 | 1/31 | 12:00 | G | W | 7 | 1 | | | 1 | 3 | 1 | 1 | | | -01 | |
| Trip Blank | | | F | W | 2 | | | | | 2 | | | | | -05 | |
| pH 7.24 | | | | | | | | | | | | | | | | |

| | | |
|---|---|---|
| Relinquished By: Ben Cavitness | Received By: | Date/Time: 1.31.22 2:45 PM |
| Relinquished By: | Received By: | Date/Time: |
| Relinquished By: | Received By: | Date/Time: |

Cooler Numbers and Temperatures:

Comments: Forgot to sample low level Mercury. Contact Matt Peter for payment via order #.

Matrix Codes: S=Soil, W=Water

Cont. Codes: [redacted]

08 April 2022

Matt Peter
Tacoma Public Utilities
3628 S 35th St
Tacoma, WA 98409

Subject: Kosmos

This corrected report replaces the original issued 16 March 2022. Indeno(1,2,3-cd)pyrene was omitted from the original report; results for this Semi-Volatile compound are now included in the report. Mercury units were changed from ng/L to ug/L; all results are now reported on ug/L. PQLs (MRLs) have been corrected to reflect laboratory limits.

Enclosed are the analytical results for samples collected 02/17/2022.

Quality Control Data are included with the sample results for your review.

If you have any questions concerning this report, call me at (253)502-2130. Please note that remaining samples associated with this report will be discarded **3 months** from the date of this report unless we are notified otherwise.

Sincerely,

DocuSigned by:
Stuart Magoon
F41AFFAA30F64EB...

Stuart Magoon
Assistant Division Manager
Environmental Services Laboratory

cc. Ben Caviness

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled |
|---|---|---|---|
| **Trip Blank** | 2202048-01 | Water | 17-Feb-22 13:15 |
| **SH4-22 Sample 2** | 2202048-02 | Water | 17-Feb-22 13:00 |
| **SH5-22 Sample 3** | 2202048-03 | Water | 17-Feb-22 13:15 |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

## CHAIN OF CUSTODY, SAMPLE RECEIPT, PRESERVATION AND STORAGE

Samples were received under appropriate Chain of Custody procedures. Containers were properly preserved and stored in accordance with the applicable method requirements.

## HOLDING TIMES

All analyses were performed within the required holding times.

## METHODS

The samples were analyzed by the following methods:

EPA Method 200.8 for Total Metals
EPA Method 625.1 for Semi-volatile Organic Analysis (SVOA) Base Neutral Acids (BNA)
EPA Method 8260D for Volatile Organic Analysis (VOA) Benzene+Toluene+Ethylbenzene+Xylenes (BTEX)
Washington Department of Ecology NWTPH-Dx and -Gx, 1997 for Diesel Range and Gasoline Range Hydrocarbons

## MINIMUM REPORTING LIMITS

Analytes are reported to the Method Detection Limit (MDL). Values below the Practical Quantitation Limit (PQL) or Reporting Limit (RL) are qualified as estimated (J) and may not be as accurate as values reported greater than the PQL (the low standard or 3 - 5 times the MDL) or RL.

## BLANKS

Blanks were analyzed at the required frequencies of the methods. Analytes were not detected in the blanks, sample concentrations were greater than 10 times the blank values, or the analytes detected in the blanks were not detected in associated samples, with the exception of the NWTPH-Dx method which had a measurable Diesel Range Hydrocarbon hit in the Heavy Oil range. Therefore, affected samples results for Diesel Range Hydrocarbons is reported as not detected at or above the associated estimated value (UJ).

## SURROGATE COMPOUNDS

Surrogate compounds were added to each sample to monitor system performance for SVOA and VOA analyses. Surrogate recoveries were within the laboratory limits or above control limits with associated targets not detected in affected samples , with the exception of 2-Fluorobiphenyl and Terphenyl-d14 in samples 2202048-02RE2 and 2202048-03RE2, due to high amount of suspended solids in the sample. Associated Diesel Range Hydrocarbon results are reported as "not detected at or above the associated estimated value" (UJ).

## LABORATORY CONTROL SAMPLES

Laboratory Control Samples were analyzed with these samples. The recoveries were within the laboratory limits.

## DUPLICATE SAMPLE ANALYSIS

Duplicate analysis was performed with these samples. Relative percent differences were within the laboratory QC limits (RPD) when the results for both the sample and the duplicate are above the PQL. limits.

## MATRIX SPIKE AND MATRIX SPIKE DUPLICATE ANALYSIS

Matrix Spike and/or Matrix Spike Duplicate analysis was performed with these samples. The recoveries were within the laboratory limits, or above control limits with affected targets not detected in the associated source sample.

## INTERNAL STANDARDS

Internal Standards were added to these samples to monitor instrument performance related to calibration drift of matrix interference in the metals analysis by ICP-MS. Internal Standards were also added to the samples for SVOA analyses. The retention times of the standards in the samples must be within one-half minute of the retention times for the standards in the continuing calibration and the area recoveries of the standards in the samples must be within 50 to 200% of the area of the standards in the continuing calibrations. All Internal Standards associated with reported results met the method criteria.

## DATA AVAILABILITY

All data associated with the samples referenced in this report are archived at the Environmental Services Laboratory and are available upon request.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and project QAPP.

DocuSigned by:
Monica Herbert
9E03038E4A0C412...
Reviewed By

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## Trip Blank

**2202048-01 (Water)**

**17-Feb-22 13:15**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **VOA** | | | | | |
| EPA 8260D_4_(6/18) | Prepared: 24-Feb-22 | Analyzed: 24-Feb-22 | | | |
| Benzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| BTEX (total) | 1.2 U | | 3.0 | 1.2 | ug/L |
| Ethylbenzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| m,p-Xylene | 0.4 U | | 1.0 | 0.4 | ug/L |
| o-Xylene | 0.2 U | | 0.5 | 0.2 | ug/L |
| Toluene | 0.2 U | | 0.5 | 0.2 | ug/L |
| *Surrogate: 1,2-Dichloroethane-d4* | | *100 %* | *26-175* | | |
| *Surrogate: Fluorobenzene* | | *99 %* | *82-127* | | |
| *Surrogate: Toluene-d8* | | *99 %* | *86-126* | | |
| WDOE NWTPH-Gx_(1997) | Prepared: 24-Feb-22 | Analyzed: 24-Feb-22 | | | |
| Gasoline Range Hydrocarbons | 50.0 U | | 50.0 | | ug/L |
| *Surrogate: 4-Bromofluorobenzene* | | *95.6 %* | *50-150* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## SH4-22 Sample 2

**2202048-02 (Water)**

**17-Feb-22 13:00**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| EPA 200.8_5.4_1994 | Prepared: 22-Feb-22 | Analyzed: 23-Feb-22 | | | |
| **Arsenic** | **7.96** | | 0.500 | 0.161 | ug/L |
| **Cadmium** | **0.704** | | 0.500 | 0.100 | ug/L |
| **Chromium** | **10.0** | | 1.54 | 1.54 | ug/L |
| **Copper** | **36.8** | | 0.800 | 0.800 | ug/L |
| **Lead** | **20.9** | | 0.500 | 0.102 | ug/L |
| **Nickel** | **14.8** | | 0.500 | 0.429 | ug/L |
| **Zinc** | **126** | | 5.00 | 1.68 | ug/L |
| EPA 245.7_2005 | Prepared: 02-Mar-22 | Analyzed: 02-Mar-22 | | | |
| Mercury | 0.0080 U | | 0.0250 | 0.0080 | ug/L |
| **VOA** | | | | | |
| EPA 8260D_4_(6/18) | Prepared: 24-Feb-22 | Analyzed: 24-Feb-22 | | | |
| Benzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| BTEX (total) | 1.2 U | | 3.0 | 1.2 | ug/L |
| Ethylbenzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| m,p-Xylene | 0.4 U | | 1.0 | 0.4 | ug/L |
| o-Xylene | 0.2 U | | 0.5 | 0.2 | ug/L |
| **Toluene** | **0.3 J** | | 0.5 | 0.2 | ug/L |
| *Surrogate: 1,2-Dichloroethane-d4* | | *97 %* | *26-175* | | |
| *Surrogate: Fluorobenzene* | | *98 %* | *82-127* | | |
| *Surrogate: Toluene-d8* | | *99 %* | *86-126* | | |
| WDOE NWTPH-Gx_(1997) | Prepared: 24-Feb-22 | Analyzed: 24-Feb-22 | | | |
| **Gasoline Range Hydrocarbons** | **50.0 U** | | 50.0 | | ug/L |
| *Surrogate: 4-Bromofluorobenzene* | | *103 %* | *50-150* | | |
| **Semi-VOA** | | | | | |
| EPA 625.1 | Prepared: 23-Feb-22 | Analyzed: 09-Mar-22 | | | |
| Benzo(a)anthracene | 0.2 U | | 1.1 | 0.2 | ug/L |
| Benzo(a)pyrene | 0.2 U | | 1.1 | 0.2 | ug/L |
| Benzo(b)fluoranthene | 0.3 U | | 1.1 | 0.3 | ug/L |
| Benzo(k)fluoranthene | 0.2 U | | 1.1 | 0.2 | ug/L |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## SH4-22 Sample 2

**2202048-02 (Water)**

**17-Feb-22 13:00**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **Semi-VOA** | | | | | |
| Chrysene | 0.2 U | | 1.1 | 0.2 | ug/L |
| Indeno(1,2,3-cd)pyrene | 0.6 U | | 1.1 | 0.6 | ug/L |
| Pyrene | 0.2 U | | 1.1 | 0.2 | ug/L |
| *Surrogate: Terphenyl-d14* | | *80 %* | *18.3-152* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## SH4-22 Sample 2

**2202048-02RE2 (Water)**

**17-Feb-22 13:00**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **Semi-VOA** | | | | | |
| WDOE NWTPH-Dx_(1997) | Prepared: 25-Feb-22 | Analyzed: 02-Mar-22 | | | |
| **Diesel Range Hydrocarbons** | **260 UJ** | | 100 | | ug/L |
| *Surrogate: 2-Fluorobiphenyl* | | *19.3 %* | *50-150* | | |
| *Surrogate: Terphenyl-d14* | | *20.0 %* | *50-150* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## SH5-22 Sample 3

**2202048-03 (Water)**

**17-Feb-22 13:15**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| EPA 200.8_5.4_1994 | Prepared: 22-Feb-22 | Analyzed: 23-Feb-22 | | | |
| **Arsenic** | **0.249 J** | | 0.500 | 0.161 | ug/L |
| Cadmium | 0.100 U | | 0.500 | 0.100 | ug/L |
| **Chromium** | **2.35** | | 1.54 | 1.54 | ug/L |
| **Copper** | **4.75** | | 0.800 | 0.800 | ug/L |
| **Lead** | **0.155 J** | | 0.500 | 0.102 | ug/L |
| **Nickel** | **0.767** | | 0.500 | 0.429 | ug/L |
| **Zinc** | **4.72 J** | | 5.00 | 1.68 | ug/L |
| EPA 245.7_2005 | Prepared: 02-Mar-22 | Analyzed: 02-Mar-22 | | | |
| Mercury | 0.0080 U | | 0.0250 | 0.0080 | ug/L |
| **VOA** | | | | | |
| EPA 8260D_4_(6/18) | Prepared: 24-Feb-22 | Analyzed: 24-Feb-22 | | | |
| Benzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| BTEX (total) | 1.2 U | | 3.0 | 1.2 | ug/L |
| Ethylbenzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| m,p-Xylene | 0.4 U | | 1.0 | 0.4 | ug/L |
| o-Xylene | 0.2 U | | 0.5 | 0.2 | ug/L |
| Toluene | 0.2 U | | 0.5 | 0.2 | ug/L |
| *Surrogate: 1,2-Dichloroethane-d4* | | *97 %* | *26-175* | | |
| *Surrogate: Fluorobenzene* | | *96 %* | *82-127* | | |
| *Surrogate: Toluene-d8* | | *98 %* | *86-126* | | |
| WDOE NWTPH-Gx_(1997) | Prepared: 24-Feb-22 | Analyzed: 24-Feb-22 | | | |
| **Gasoline Range Hydrocarbons** | **50.0 U** | | 50.0 | | ug/L |
| *Surrogate: 4-Bromofluorobenzene* | | *97.5 %* | *50-150* | | |
| **Semi-VOA** | | | | | |
| EPA 625.1 | Prepared: 23-Feb-22 | Analyzed: 09-Mar-22 | | | |
| Benzo(a)anthracene | 0.2 U | | 1.0 | 0.2 | ug/L |
| Benzo(a)pyrene | 0.2 U | | 1.0 | 0.2 | ug/L |
| Benzo(b)fluoranthene | 0.3 U | | 1.0 | 0.3 | ug/L |
| Benzo(k)fluoranthene | 0.2 U | | 1.0 | 0.2 | ug/L |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## SH5-22 Sample 3

**2202048-03 (Water)**

**17-Feb-22 13:15**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **Semi-VOA** | | | | | |
| Chrysene | 0.2 U | | 1.0 | 0.2 | ug/L |
| Indeno(1,2,3-cd)pyrene | 0.6 U | | 1.0 | 0.6 | ug/L |
| Pyrene | 0.2 U | | 1.0 | 0.2 | ug/L |
| *Surrogate: Terphenyl-d14* | | *88 %* | *18.3-152* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## SH5-22 Sample 3

**2202048-03RE2 (Water)**

**17-Feb-22 13:15**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **Semi-VOA** | | | | | |
| WDOE NWTPH-Dx_(1997) | Prepared: 25-Feb-22 | Analyzed: 02-Mar-22 | | | |
| **Diesel Range Hydrocarbons** | **152 UJ** | | 100 | | ug/L |
| *Surrogate: 2-Fluorobiphenyl* | | *41.6 %* | *50-150* | | |
| *Surrogate: Terphenyl-d14* | | *66.2 %* | *50-150* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## Metals - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0216 - EPA 200.8_5.4_1994** | | | | | | | | | |
| **Blank (BFB0216-BLK1)** | | | | Prepared: 22-Feb-22 Analyzed: 23-Feb-22 | | | | | |
| **BFB0216-BLK1** | | | | | | | | | |
| **Arsenic** | **0.161 U** | **0.161** | **ug/L** | | | | | | |
| **Cadmium** | **0.100 U** | **0.100** | **ug/L** | | | | | | |
| **Chromium** | **1.54 U** | **1.54** | **ug/L** | | | | | | |
| **Copper** | **0.800 U** | **0.800** | **ug/L** | | | | | | |
| **Lead** | **0.102 U** | **0.102** | **ug/L** | | | | | | |
| **Nickel** | **0.429 U** | **0.429** | **ug/L** | | | | | | |
| **Zinc** | **1.68 U** | **1.68** | **ug/L** | | | | | | |
| **Duplicate (BFB0216-DUP1)** | **Source: 2202048-03** | | | Prepared: 22-Feb-22 Analyzed: 23-Feb-22 | | | | | |
| **BFB0216-DUP1** | | | | | | | | | |
| **Arsenic** | **0.268 J** | **0.161** | **ug/L** | | **0.249** | | | **7** | **20** |
| **Cadmium** | **0.100 U** | **0.100** | **ug/L** | | **ND** | | | | **20** |
| **Chromium** | **2.59** | **1.54** | **ug/L** | | **2.35** | | | **10** | **20** |
| **Copper** | **4.67** | **0.800** | **ug/L** | | **4.75** | | | **2** | **20** |
| **Lead** | **0.155 J** | **0.102** | **ug/L** | | **0.155** | | | **0.06** | **20** |
| **Nickel** | **0.785** | **0.429** | **ug/L** | | **0.767** | | | **2** | **20** |
| **Zinc** | **4.67 J** | **1.68** | **ug/L** | | **4.72** | | | **1** | **20** |
| **LCS (BFB0216-BS1)** | | | | Prepared: 22-Feb-22 Analyzed: 23-Feb-22 | | | | | |
| **BFB0216-BS1** | | | | | | | | | |
| **Arsenic** | **103** | **0.161** | **ug/L** | **100** | | **103** | **85-115** | | **200** |
| **Cadmium** | **42.3** | **0.100** | **ug/L** | **40.0** | | **106** | **85-115** | | **200** |
| **Chromium** | **105** | **1.54** | **ug/L** | **100** | | **105** | **85-115** | | **200** |
| **Copper** | **106** | **0.800** | **ug/L** | **100** | | **106** | **85-115** | | **200** |
| **Lead** | **106** | **0.102** | **ug/L** | **100** | | **106** | **85-115** | | **200** |
| **Nickel** | **107** | **0.429** | **ug/L** | **100** | | **107** | **85-115** | | **200** |
| **Zinc** | **107** | **1.68** | **ug/L** | **100** | | **107** | **85-115** | | **200** |
| **Matrix Spike (BFB0216-MS1)** | **Source: 2202048-03** | | | Prepared: 22-Feb-22 Analyzed: 23-Feb-22 | | | | | |
| **BFB0216-MS1** | | | | | | | | | |
| **Arsenic** | **406** | **0.161** | **ug/L** | **400** | **0.249** | **101** | **70-130** | | **200** |
| **Cadmium** | **406** | **0.100** | **ug/L** | **400** | **ND** | **101** | **70-130** | | **200** |
| **Chromium** | **440** | **1.54** | **ug/L** | **400** | **2.35** | **109** | **70-130** | | **200** |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

## Metals - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0216 - EPA 200.8_5.4_1994** | | | | | | | | | |
| **Copper** | **496** | **0.800** | **ug/L** | **400** | **4.75** | **123** | **70-130** | | **200** |
| **Lead** | **406** | **0.102** | **ug/L** | **400** | **0.155** | **101** | **70-130** | | **200** |
| **Nickel** | **414** | **0.429** | **ug/L** | **400** | **0.767** | **103** | **70-130** | | **200** |
| **Zinc** | **410** | **1.68** | **ug/L** | **400** | **4.72** | **101** | **70-130** | | **200** |
| **Batch BFC0019 - EPA 245.7_2005** | | | | | | | | | |
| **Blank (BFC0019-BLK1)** | | | | Prepared & Analyzed: 02-Mar-22 | | | | | |
| **BFC0019-BLK1** | | | | | | | | | |
| **Mercury** | **0.0016 U** | **0.0016** | **ug/L** | | | | | | |
| **LCS (BFC0019-BS1)** | | | | Prepared & Analyzed: 02-Mar-22 | | | | | |
| **BFC0019-BS1** | | | | | | | | | |
| **Mercury** | **0.0502** | **0.0016** | **ug/L** | **0.0500** | | **100** | **80-120** | | **200** |
| **Matrix Spike (BFC0019-MS1)** | **Source: 2202048-03** | | | Prepared & Analyzed: 02-Mar-22 | | | | | |
| **BFC0019-MS1** | | | | | | | | | |
| **Mercury** | **0.231** | **0.0080** | **ug/L** | **0.250** | **ND** | **92** | **63-111** | | **18** |
| **Matrix Spike Dup (BFC0019-MSD1)** | **Source: 2202048-03** | | | Prepared & Analyzed: 02-Mar-22 | | | | | |
| **BFC0019-MSD1** | | | | | | | | | |
| **Mercury** | **0.222** | **0.0080** | **ug/L** | **0.250** | **ND** | **89** | **63-111** | **4** | **18** |




*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## VOA - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0280 - EPA 8260D_4_(6/18)** | | | | | | | | | |
| **Blank (BFB0280-BLK1)** | | | | Prepared & Analyzed: 24-Feb-22 | | | | | |
| **BFB0280-BLK1** | | | | | | | | | |
| **Benzene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Gasoline Range Hydrocarbons** | **250 U** | | **ug/L** | | | | | | |
| **Toluene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Ethylbenzene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **m,p-Xylene** | **0.4 U** | **0.4** | **ug/L** | | | | | | |
| **o-Xylene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **BTEX (total)** | **1.2 U** | **1.2** | **ug/L** | | | | | | |
| *Surrogate: 4-Bromofluorobenzene* | *10* | | ug/L | *10.0* | | *104* | *50-150* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *9.74* | | ug/L | *10.0* | | *97* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *9.51* | | ug/L | *10.0* | | *95* | *82-127* | | |
| *Surrogate: Toluene-d8* | *9.69* | | ug/L | *10.0* | | *97* | *86-126* | | |
| **Duplicate (BFB0280-DUP1)** | **Source: 2202048-02** | | | Prepared & Analyzed: 24-Feb-22 | | | | | |
| **BFB0280-DUP1** | | | | | | | | | |
| **Benzene** | **0.2 U** | **0.2** | **ug/L** | | **ND** | | | | **20** |
| **Gasoline Range Hydrocarbons** | **28.5** | | **ug/L** | | **18.4** | | | **43.5** | **30** |
| **Toluene** | **0.2 U** | **0.2** | **ug/L** | | **0.3** | | | **12** | **20** |
| **Ethylbenzene** | **0.2 U** | **0.2** | **ug/L** | | **ND** | | | | **20** |
| **m,p-Xylene** | **0.4 U** | **0.4** | **ug/L** | | **ND** | | | | **20** |
| **o-Xylene** | **0.2 U** | **0.2** | **ug/L** | | **ND** | | | | **20** |
| *Surrogate: 4-Bromofluorobenzene* | *10* | | ug/L | *10.0* | | *103* | *50-150* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *10.0* | | ug/L | *10.0* | | *100* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *10.1* | | ug/L | *10.0* | | *101* | *82-127* | | |
| *Surrogate: Toluene-d8* | *10.2* | | ug/L | *10.0* | | *102* | *86-126* | | |
| **LCS (BFB0280-BS1)** | | | | Prepared & Analyzed: 24-Feb-22 | | | | | |
| **BFB0280-BS1** | | | | | | | | | |
| **Benzene** | **9.1** | | **ug/L** | **10.0** | | **91** | **60.6-136** | | **20** |
| **Toluene** | **9.9** | | **ug/L** | **10.0** | | **99** | **62.8-131** | | **20** |
| **Ethylbenzene** | **10.3** | | **ug/L** | **10.0** | | **103** | **64.6-128** | | **20** |
| **m,p-Xylene** | **18.5** | | **ug/L** | **20.0** | | **93** | **61.1-135** | | **20** |
| **o-Xylene** | **8.8** | | **ug/L** | **10.0** | | **88** | **63.9-129** | | **20** |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

## VOA - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0280 - WDOE NWTPH-Gx_(1997)** | | | | | | | | | |
| *Surrogate: 4-Bromofluorobenzene* | *9.8* | | ug/L | *10.0* | | *98.4* | *50-150* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *9.45* | | ug/L | *10.0* | | *95* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *9.74* | | ug/L | *10.0* | | *97* | *82-127* | | |
| *Surrogate: Toluene-d8* | *9.71* | | ug/L | *10.0* | | *97* | *86-126* | | |
| **BFB0280-BS2** | | | | | | | | | |
| **Gasoline Range Hydrocarbons** | **56.3** | | **ug/L** | **100** | | **56.3** | **50-150** | | **200** |
| *Surrogate: 4-Bromofluorobenzene* | *9.2* | | ug/L | *10.0* | | *91.8* | *50-150* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *9.80* | | ug/L | *10.0* | | *98* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *9.33* | | ug/L | *10.0* | | *93* | *82-127* | | |
| *Surrogate: Toluene-d8* | *9.50* | | ug/L | *10.0* | | *95* | *86-126* | | |
| **Matrix Spike (BFB0280-MS2)** | **Source: 2202048-03** | | | Prepared & Analyzed: 24-Feb-22 | | | | | |
| **BFB0280-MS2** | | | | | | | | | |
| **Benzene** | **8.7** | | **ug/L** | **10.0** | **0.0** | **87** | **76.2-116** | | **20** |
| **Toluene** | **9.2** | | **ug/L** | **10.0** | **0.0** | **92** | **78.3-112** | | **20** |
| **Ethylbenzene** | **9.2** | | **ug/L** | **10.0** | **0.0** | **92** | **78.8-110** | | **20** |
| **m,p-Xylene** | **16.9** | | **ug/L** | **20.0** | **0.0** | **85** | **75.9-110** | | **20** |
| **o-Xylene** | **7.9** | | **ug/L** | **10.0** | **0.0** | **79** | **78.4-110** | | **20** |
| *Surrogate: 1,2-Dichloroethane-d4* | *9.56* | | ug/L | *10.0* | | *96* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *9.97* | | ug/L | *10.0* | | *100* | *82-127* | | |
| *Surrogate: Toluene-d8* | *10.0* | | ug/L | *10.0* | | *100* | *86-126* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## Semi-VOA - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFB0230 - EPA 625.1** | | | | | | | | | |
| **Blank (BFB0230-BLK1)** | | | | Prepared: 23-Feb-22 Analyzed: 08-Mar-22 | | | | | |
| **BFB0230-BLK1** | | | | | | | | | |
| **Pyrene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Benzo(a)anthracene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Chrysene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Benzo(a)pyrene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Indeno(1,2,3-cd)pyrene** | **0.6 U** | **0.6** | **ug/L** | | | | | | |
| **Benzo(b)fluoranthene** | **0.3 U** | **0.3** | **ug/L** | | | | | | |
| **Benzo(k)fluoranthene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| *Surrogate: Terphenyl-d14* | *22* | | ug/L | *25.0* | | *87* | *18.3-152* | | |
| **LCS (BFB0230-BS1)** | | | | Prepared: 23-Feb-22 Analyzed: 08-Mar-22 | | | | | |
| **BFB0230-BS1** | | | | | | | | | |
| **Pyrene** | **23** | **0.2** | **ug/L** | **25.0** | | **93** | **52-120** | | **200** |
| **Benzo(a)anthracene** | **23** | **0.2** | **ug/L** | **25.0** | | **92** | **33-143** | | **200** |
| **Chrysene** | **24** | **0.2** | **ug/L** | **25.0** | | **95** | **17-168** | | **200** |
| **Benzo(a)pyrene** | **26** | **0.2** | **ug/L** | **25.0** | | **103** | **17-163** | | **200** |
| **Indeno(1,2,3-cd)pyrene** | **24** | **0.6** | **ug/L** | **25.0** | | **95** | **0.1-171** | | **200** |
| **Benzo(b)fluoranthene** | **24** | **0.3** | **ug/L** | **25.0** | | **97** | **24-159** | | **200** |
| **Benzo(k)fluoranthene** | **24** | **0.2** | **ug/L** | **25.0** | | **96** | **11-162** | | **200** |
| *Surrogate: Terphenyl-d14* | *23* | | ug/L | *25.0* | | *92* | *18.3-152* | | |
| **Batch BFB0286 - WDOE NWTPH-Dx_(1997)** | | | | | | | | | |
| **Blank (BFB0286-BLK1)** | | | | Prepared: 25-Feb-22 Analyzed: 02-Mar-22 | | | | | |
| **BFB0286-BLK1** | | | | | | | | | |
| **Diesel Range Hydrocarbons** | **135** | **100** | **ug/L** | | | | | | |
| *Surrogate: Terphenyl-d14* | *41* | | ug/L | *50.0* | | *82.2* | *50-150* | | |
| *Surrogate: 2-Fluorobiphenyl* | *28* | | ug/L | *50.0* | | *55.8* | *50-150* | | |
| **LCS (BFB0286-BS1)** | | | | Prepared: 25-Feb-22 Analyzed: 02-Mar-22 | | | | | |
| **BFB0286-BS1** | | | | | | | | | |
| **Diesel Range Hydrocarbons** | **1330** | **100** | **ug/L** | **1000** | | **133** | **50-150** | | **200** |
| *Surrogate: Terphenyl-d14* | *43* | | ug/L | *50.0* | | *86.8* | *50-150* | | |
| *Surrogate: 2-Fluorobiphenyl* | *29* | | ug/L | *50.0* | | *58.8* | *50-150* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 08-Apr-22 10:03 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte Not Detected at or above the associated value |
| UJ | Analyte Not Detected at or above the associated estimated value |
| J | The analyte was positively identified. The associated value is an estimate. For BOD Analysis: The sample dilutions set-up for the BOD analysis did not meet the oxygen depletion criteria of at least 2 mg/l dissolved oxygen depletion. Therefore the reported BOD result is estimated biased high |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| E | Analyte was determined above the upper quantitation range of the method. The associated value is an estimate. |
| NJ | There is evidence the analyte is present. The associated value is an estimate. |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |
| H | The sample dilutions set up for the BOD analysis failed to meet the criteria of a residual dissolved oxygen of at least 1 mg/l. Therefore actual concentration is likely greater than the reported result. |

# Chain of Custody

Tacoma
326 East D Street
Tacoma
WA, 98421-1801
phone (253) 502-2130
fax (253) 502-2170



Lab Work Order Number 2202048

| | | | |
|---|---|---|---|
| Client Name: Tacoma Public Utilities | | Project Name: Kosmos Oil Clean UP | |
| Client Contact: Matt Peter or Ben Caviness | | Project Number: | |
| Address: 3628 S 35th St | | Project Description: | |
| City: Tacoma | | PO Number: | |
| State/Zip: WA, 98409 | | Sampler Signatures: Benjamin Caviness | |
| Phone: (253) 208-2814 | Fax: mpeter@cityoftacoma.org | | |
| Sampler: Ben Caviness | bcaviness2@cityoftacoma.org | | |

Requested Analyses

Requested Turn Around: Rush requests subject to additional charge. Rush requests subject to lab approval. Standard (days) Expedited (days) Due Date

| Sample Name or Field ID | Sampled Date | Sampled Time | Sample Type | Matrix Code | Container Count | Preservation Code ::AN | ::AHCL | ::Cool | Sample Number | Sample Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| SH4-22 Sample 2 | 2/17/22 | 13:00 | G | W | 9 | • | • | • | -02 | |
| Trip Blank | 2/17/22 | 13:15 | F | W | 2 | • | • | • | -01 | |
| SH5-22 Sample 3 | 2/17/22 | 13:45 | G | W | 9 | X | X | X | -03 | |

Arsenic, Total 200.8::Chromium, Total 200.8::Copper, Total 200.8::Lead, Total 200.8::Nickel, Total 200.8::pH_4500-H+B::Zinc, Total 200.8
Mercury, Total LR
245.7::NWTPH_DX::NWTPH_G::VOA_624.1_BTEX
S625.1_BNA::~~Solids, Total Suspended SM2540D~~ see list.

| | | | |
|---|---|---|---|
| Relinquished By: Ben Caviness | Received By: | Date/Time: 2/17/22 4:50 | Comments: High sediment amount in SH4-22 Sample 2 |
| Relinquished By: | Received By: | Date/Time: | |
| Relinquished By: | Received By: | Date/Time: | |
| Cooler Numbers and Temperatures: | | | |

Matrix Codes: W=Water

Preserv. Codes: AHCL=5mL/L 12 N HCl,AHCL=HCl to pH<2, Cool <6°C,AN=Do Right Away,AN=HNO3 to pH<2, Cool <6°C,Cool=Cool <6°C

Cont. Codes =1 L WM HDPE, =1L BR AG, =1L BR AG HCl, =250 mL FP HCl, =250 mL WM HDPE HNO3, =40 mL VOA HCl, =No Container

# Extra for TSS in case is need it on 2nd floor refrigerator. MMH 2/18/22




21 April 2022

Matt Peter
Tacoma Public Utilities
3628 S 35th St
Tacoma, WA 98409

Subject: Kosmos

Enclosed are the analytical results for samples collected 03/29/2022.

Quality Control Data are included with the sample results for your review.

If you have any questions concerning this report, call me at (253)502-2130. Please note that remaining samples associated with this report will be discarded **3 months** from the date of this report unless we are notified otherwise.

Sincerely,

DocuSigned by:
Stuart Magoon
F41AFFAA30F64EB...

Stuart Magoon
Assistant Division Manager
Environmental Services Laboratory

cc. Ben Caviness

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 21-Apr-22 08:48 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled |
|---|---|---|---|
| **Trip Blank** | 2203070-01 | Water | 29-Mar-22 09:20 |
| **SH2-22 Sample 4** | 2203070-02 | Water | 29-Mar-22 09:20 |

## CHAIN OF CUSTODY, SAMPLE RECEIPT, PRESERVATION AND STORAGE

Samples were received under appropriate Chain of Custody procedures. Containers were properly preserved and stored in accordance with the applicable method requirements.

## HOLDING TIMES

All analyses were performed within the required holding times.

## METHODS

The samples were analyzed by the following methods:

EPA Method 200.8 for Total Metals
EPA Method 625.1 for Semi-volatile Organic Analysis (SVOA) Base Neutral Acids (BNA)
EPA Method 8260D for Volatile Organic Analysis (VOA) Benzene+Toluene+Ethylbenzene+Xylenes (BTEX)
Washington Department of Ecology NWTPH-Dx and -Gx, 1997 for Diesel Range and Gasoline Range Hydrocarbons

## MINIMUM REPORTING LIMITS

Analytes are reported to the Method Detection Limit (MDL). Values below the Practical Quantitation Limit (PQL) or Reporting Limit (RL) are qualified as estimated (J) and may not be as accurate as values reported greater than the PQL (the low standard or 3 - 5 times the MDL) or RL.

## BLANKS

Blanks were analyzed at the required frequencies of the methods. Analytes were not detected in the blanks, sample concentrations were greater than 10 times the blank values, or the analytes detected in the blanks were not detected in associated samples.

## SURROGATE COMPOUNDS

Surrogate compounds were added to each sample to monitor system performance for SVOA and VOA analyses. Surrogate recoveries were within the laboratory limits or above control limits with associated targets not detected in affected samples, with the exception of 2-Fluorobiphenyl and Terphenyl-d14 in sample 2203070-02RE1, due to high amount of suspended solids on the sample. Associated Diesel Range Hydrocarbon results are reported as estimated (J).

## ANALYTICAL ISSUES

Sample 2203070-02 required extract cleanup due to suspected high levels of non-petroleum compounds. Though there were compounds detected in the semivolatile hydrocarbon range there was not a pattern match for any of the typical petroleum products. The lab performed and mass spectral analysis to identify the more prominent compounds in the chromatogram and determined these compounds were not petroleum, but instead were more typical of biogenic material. These large discrete non-hydrocarbon peaks were subtracted from the Diesel Range Hydrocarbon results in alignment with the clean-up for removal of non-petroleum based compounds to produce the final result reported.

## LABORATORY CONTROL SAMPLES

Laboratory Control Samples were analyzed with these samples. The recoveries were within the laboratory limits.

## DUPLICATE SAMPLE ANALYSIS

Duplicate analysis was performed with these samples. Relative percent differences were within the laboratory limits.

## MATRIX SPIKE AND MATRIX SPIKE DUPLICATE ANALYSIS

Matrix Spike and/or Matrix Spike Duplicate analysis was performed with these samples. The recoveries were within the laboratory limits, or above control limits with affected targets not detected in the associated source sample.

## INTERNAL STANDARDS

Internal Standards were added to these samples to monitor instrument performance related to calibration drift of matrix interference in the metals analysis by ICP-MS. Internal Standards were also added to the samples for SVOA analyses. The retention times of the standards in the samples must be within one-half minute of the retention times for the standards in the continuing calibration and the area recoveries of the standards in the samples must be within 50 to 200% of the area of the standards in the continuing calibrations. All Internal Standards associated with reported results met the method criteria.

## DATA AVAILABILITY

All data associated with the samples referenced in this report are archived at the Environmental Services Laboratory and are available upon request.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and project QAPP.

DocuSigned by:
Monica Herbert
9E03038E4A0C412...

Reviewed By

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 21-Apr-22 08:48 |

## Trip Blank

**2203070-01 (Water)**

**29-Mar-22 09:20**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **VOA** | | | | | |
| EPA 8260D_4_(6/18) | Prepared: 04-Apr-22 | Analyzed: 04-Apr-22 | | | |
| Benzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| BTEX (total) | 1.2 U | | 3.0 | 1.2 | ug/L |
| Ethylbenzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| m,p-Xylene | 0.4 U | | 1.0 | 0.4 | ug/L |
| o-Xylene | 0.2 U | | 0.5 | 0.2 | ug/L |
| Toluene | 0.2 U | | 0.5 | 0.2 | ug/L |
| *Surrogate: 1,2-Dichloroethane-d4* | | *101 %* | *26-175* | | |
| *Surrogate: Fluorobenzene* | | *98 %* | *82-127* | | |
| *Surrogate: Toluene-d8* | | *100 %* | *86-126* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 21-Apr-22 08:48 |

## SH2-22 Sample 4

**2203070-02 (Water)**

**29-Mar-22 09:20**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| EPA 200.8_5.4_1994 | Prepared: 05-Apr-22 | Analyzed: 06-Apr-22 | | | |
| **Arsenic** | **2.65** | | 0.500 | 0.161 | ug/L |
| Cadmium | 0.100 U | | 0.500 | 0.100 | ug/L |
| **Chromium** | **2.20** | | 1.54 | 1.54 | ug/L |
| **Copper** | **3.64** | | 0.800 | 0.800 | ug/L |
| **Lead** | **0.346 J** | | 0.500 | 0.102 | ug/L |
| **Nickel** | **0.650** | | 0.500 | 0.429 | ug/L |
| **Zinc** | **12.3** | | 5.00 | 1.68 | ug/L |
| EPA 245.7_2005 | Prepared: 31-Mar-22 | Analyzed: 31-Mar-22 | | | |
| Mercury | 0.0080 U | | 0.0250 | 0.0080 | ug/L |
| **VOA** | | | | | |
| EPA 8260D_4_(6/18) | Prepared: 04-Apr-22 | Analyzed: 04-Apr-22 | | | |
| Benzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| BTEX (total) | 1.2 U | | 3.0 | 1.2 | ug/L |
| Ethylbenzene | 0.2 U | | 0.5 | 0.2 | ug/L |
| m,p-Xylene | 0.4 U | | 1.0 | 0.4 | ug/L |
| o-Xylene | 0.2 U | | 0.5 | 0.2 | ug/L |
| **Toluene** | **0.7** | | 0.5 | 0.2 | ug/L |
| *Surrogate: 1,2-Dichloroethane-d4* | | *98 %* | *26-175* | | |
| *Surrogate: Fluorobenzene* | | *99 %* | *82-127* | | |
| *Surrogate: Toluene-d8* | | *100 %* | *86-126* | | |
| WDOE NWTPH-Gx_(1997) | Prepared: 04-Apr-22 | Analyzed: 04-Apr-22 | | | |
| **Gasoline Range Hydrocarbons** | **50.0 U** | | 50.0 | | ug/L |
| *Surrogate: 4-Bromofluorobenzene* | | *106 %* | *50-150* | | |
| **Semi-VOA** | | | | | |
| EPA 625.1 | Prepared: 30-Mar-22 | Analyzed: 13-Apr-22 | | | |
| Benzo(a)anthracene | 0.2 U | | 1.0 | 0.2 | ug/L |
| Benzo(a)pyrene | 0.2 U | | 1.0 | 0.2 | ug/L |
| Benzo(b)fluoranthene | 0.3 U | | 1.0 | 0.3 | ug/L |
| Benzo(k)fluoranthene | 0.2 U | | 1.0 | 0.2 | ug/L |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 21-Apr-22 08:48 |

## SH2-22 Sample 4

**2203070-02 (Water)**

**29-Mar-22 09:20**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **Semi-VOA** | | | | | |
| Chrysene | 0.2 U | | 1.0 | 0.2 | ug/L |
| Indeno(1,2,3-cd)pyrene | 0.6 U | | 1.0 | 0.6 | ug/L |
| Pyrene | 0.2 U | | 1.0 | 0.2 | ug/L |
| *Surrogate: Terphenyl-d14* | | *91 %* | *18.3-152* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 21-Apr-22 08:48 |

## SH2-22 Sample 4

**2203070-02RE1 (Water)**

**29-Mar-22 09:20**

| Analyte | Result | | PQL | MDL | Units |
|---|---|---|---|---|---|
| **Semi-VOA** | | | | | |
| WDOE NWTPH-Dx_(1997) | Prepared: 31-Mar-22 | Analyzed: 31-Mar-22 | | | |
| **Diesel Range Hydrocarbons** | **125 J** | | 100 | | ug/L |
| *Surrogate: 2-Fluorobiphenyl* | | *23.1 %* | *50-150* | | |
| *Surrogate: Terphenyl-d14* | | *35.7 %* | *50-150* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 21-Apr-22 08:48 |

## Metals - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFC0402 - EPA 245.7_2005** | | | | | | | | | |
| **Blank (BFC0402-BLK1)** | | | | Prepared & Analyzed: 31-Mar-22 | | | | | |
| **BFC0402-BLK1** | | | | | | | | | |
| **Mercury** | **0.0016 U** | **0.0016** | **ug/L** | | | | | | |
| **LCS (BFC0402-BS1)** | | | | Prepared & Analyzed: 31-Mar-22 | | | | | |
| **BFC0402-BS1** | | | | | | | | | |
| **Mercury** | **0.0472** | **0.0016** | **ug/L** | **0.0500** | | **94** | **80-120** | | **200** |
| **Matrix Spike (BFC0402-MS1)** | **Source: 2203070-02** | | | Prepared & Analyzed: 31-Mar-22 | | | | | |
| **BFC0402-MS1** | | | | | | | | | |
| **Mercury** | **0.199** | **0.0080** | **ug/L** | **0.250** | **ND** | **79** | **63-111** | | **18** |
| **Matrix Spike Dup (BFC0402-MSD1)** | **Source: 2203070-02** | | | Prepared & Analyzed: 31-Mar-22 | | | | | |
| **BFC0402-MSD1** | | | | | | | | | |
| **Mercury** | **0.199** | **0.0080** | **ug/L** | **0.250** | **ND** | **79** | **63-111** | **0** | **18** |
| **Batch BFC0406 - EPA 200.8_5.4_1994** | | | | | | | | | |
| **Blank (BFC0406-BLK1)** | | | | Prepared: 05-Apr-22 Analyzed: 06-Apr-22 | | | | | |
| **BFC0406-BLK1** | | | | | | | | | |
| **Arsenic** | **0.161 U** | **0.161** | **ug/L** | | | | | | |
| **Cadmium** | **0.100 U** | **0.100** | **ug/L** | | | | | | |
| **Chromium** | **1.54 U** | **1.54** | **ug/L** | | | | | | |
| **Copper** | **0.800 U** | **0.800** | **ug/L** | | | | | | |
| **Lead** | **0.102 U** | **0.102** | **ug/L** | | | | | | |
| **Nickel** | **0.429 U** | **0.429** | **ug/L** | | | | | | |
| **Zinc** | **1.68 U** | **1.68** | **ug/L** | | | | | | |
| **Duplicate (BFC0406-DUP1)** | **Source: 2203070-02** | | | Prepared: 05-Apr-22 Analyzed: 06-Apr-22 | | | | | |
| **BFC0406-DUP1** | | | | | | | | | |
| **Arsenic** | **2.64** | **0.161** | **ug/L** | | **2.65** | | | **0.2** | **20** |
| **Cadmium** | **0.100 U** | **0.100** | **ug/L** | | **ND** | | | | **20** |
| **Chromium** | **2.22** | **1.54** | **ug/L** | | **2.20** | | | **1** | **20** |
| **Copper** | **3.88** | **0.800** | **ug/L** | | **3.64** | | | **6** | **20** |
| **Lead** | **0.333 J** | **0.102** | **ug/L** | | **0.346** | | | **4** | **20** |
| **Nickel** | **0.655** | **0.429** | **ug/L** | | **0.650** | | | **0.9** | **20** |
| **Zinc** | **12.3** | **1.68** | **ug/L** | | **12.3** | | | **0.4** | **20** |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 21-Apr-22 08:48 |

## Metals - Quality Control

## Environmental Services Laboratory

| Sample ID<br>Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFC0406 - EPA 200.8_5.4_1994** | | | | | | | | | |
| **LCS (BFC0406-BS1)** | | | | Prepared: 05-Apr-22 Analyzed: 06-Apr-22 | | | | | |
| **BFC0406-BS1** | | | | | | | | | |
| **Arsenic** | **99.0** | **0.161** | **ug/L** | **100** | | **99** | **85-115** | | **200** |
| **Cadmium** | **40.7** | **0.100** | **ug/L** | **40.0** | | **102** | **85-115** | | **200** |
| **Chromium** | **100** | **1.54** | **ug/L** | **100** | | **100** | **85-115** | | **200** |
| **Copper** | **102** | **0.800** | **ug/L** | **100** | | **102** | **85-115** | | **200** |
| **Lead** | **101** | **0.102** | **ug/L** | **100** | | **101** | **85-115** | | **200** |
| **Nickel** | **102** | **0.429** | **ug/L** | **100** | | **102** | **85-115** | | **200** |
| **Zinc** | **99.9** | **1.68** | **ug/L** | **100** | | **100** | **85-115** | | **200** |
| **Matrix Spike (BFC0406-MS1)** | **Source: 2203070-02** | | | Prepared: 05-Apr-22 Analyzed: 06-Apr-22 | | | | | |
| **BFC0406-MS1** | | | | | | | | | |
| **Arsenic** | **409** | **0.161** | **ug/L** | **400** | **2.65** | **102** | **70-130** | | **200** |
| **Cadmium** | **405** | **0.100** | **ug/L** | **400** | **ND** | **101** | **70-130** | | **200** |
| **Chromium** | **432** | **1.54** | **ug/L** | **400** | **2.20** | **107** | **70-130** | | **200** |
| **Copper** | **488** | **0.800** | **ug/L** | **400** | **3.64** | **121** | **70-130** | | **200** |
| **Lead** | **408** | **0.102** | **ug/L** | **400** | **0.346** | **102** | **70-130** | | **200** |
| **Nickel** | **407** | **0.429** | **ug/L** | **400** | **0.650** | **101** | **70-130** | | **200** |
| **Zinc** | **405** | **1.68** | **ug/L** | **400** | **12.3** | **98** | **70-130** | | **200** |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 21-Apr-22 08:48 |

## VOA - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFD0018 - EPA 8260D_4_(6/18)** | | | | | | | | | |
| **Blank (BFD0018-BLK1)** | | | | Prepared & Analyzed: 04-Apr-22 | | | | | |
| **BFD0018-BLK1** | | | | | | | | | |
| **Benzene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Gasoline Range Hydrocarbons** | **250 U** | | **ug/L** | | | | | | |
| **Toluene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Ethylbenzene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **m,p-Xylene** | **0.4 U** | **0.4** | **ug/L** | | | | | | |
| **o-Xylene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **BTEX (total)** | **1.2 U** | **1.2** | **ug/L** | | | | | | |
| *Surrogate: 4-Bromofluorobenzene* | *9.9* | | ug/L | *10.0* | | *99.4* | *50-150* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *9.70* | | ug/L | *10.0* | | *97* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *9.89* | | ug/L | *10.0* | | *99* | *82-127* | | |
| *Surrogate: Toluene-d8* | *9.93* | | ug/L | *10.0* | | *99* | *86-126* | | |
| **LCS (BFD0018-BS1)** | | | | Prepared & Analyzed: 04-Apr-22 | | | | | |
| **BFD0018-BS1** | | | | | | | | | |
| **Benzene** | **4.6** | **0.2** | **ug/L** | **5.00** | | **92** | **60.6-136** | | **20** |
| **Toluene** | **5.0** | **0.2** | **ug/L** | **5.00** | | **100** | **62.8-131** | | **20** |
| **Ethylbenzene** | **5.0** | **0.2** | **ug/L** | **5.00** | | **99** | **64.6-128** | | **20** |
| **m,p-Xylene** | **9.5** | **0.4** | **ug/L** | **10.0** | | **95** | **61.1-135** | | **20** |
| **o-Xylene** | **4.7** | **0.2** | **ug/L** | **5.00** | | **94** | **63.9-129** | | **20** |
| *Surrogate: 1,2-Dichloroethane-d4* | *10.0* | | ug/L | *10.0* | | *100* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *10.2* | | ug/L | *10.0* | | *102* | *82-127* | | |
| *Surrogate: Toluene-d8* | *10.4* | | ug/L | *10.0* | | *104* | *86-126* | | |
| **BFD0018-BS2** | | | | | | | | | |
| **Gasoline Range Hydrocarbons** | **60.7** | | **ug/L** | **100** | | **60.7** | **50-150** | | |
| *Surrogate: 4-Bromofluorobenzene* | *10* | | ug/L | *10.0* | | *101* | *50-150* | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *10.2* | | ug/L | *10.0* | | *102* | *26-175* | | |
| *Surrogate: Fluorobenzene* | *10.1* | | ug/L | *10.0* | | *101* | *82-127* | | |
| *Surrogate: Toluene-d8* | *10.2* | | ug/L | *10.0* | | *102* | *86-126* | | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

## Semi-VOA - Quality Control

## Environmental Services Laboratory

| Sample ID / Analyte | Result | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch BFC0396 - EPA 625.1** | | | | | | | | | |
| **Blank (BFC0396-BLK1)** | | | | Prepared: 30-Mar-22 Analyzed: 13-Apr-22 | | | | | |
| **BFC0396-BLK1** | | | | | | | | | |
| **Pyrene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Benzo(a)anthracene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Chrysene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Benzo(a)pyrene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| **Indeno(1,2,3-cd)pyrene** | **0.6 U** | **0.6** | **ug/L** | | | | | | |
| **Benzo(b)fluoranthene** | **0.3 U** | **0.3** | **ug/L** | | | | | | |
| **Benzo(k)fluoranthene** | **0.2 U** | **0.2** | **ug/L** | | | | | | |
| *Surrogate: Terphenyl-d14* | *23* | | ug/L | *25.0* | | *93* | *18.3-152* | | |
| **LCS (BFC0396-BS1)** | | | | Prepared: 30-Mar-22 Analyzed: 13-Apr-22 | | | | | |
| **BFC0396-BS1** | | | | | | | | | |
| **Pyrene** | **22** | **0.2** | **ug/L** | **25.0** | | **89** | **52-120** | | **200** |
| **Benzo(a)anthracene** | **23** | **0.2** | **ug/L** | **25.0** | | **90** | **33-143** | | **200** |
| **Chrysene** | **23** | **0.2** | **ug/L** | **25.0** | | **93** | **17-168** | | **200** |
| **Benzo(a)pyrene** | **26** | **0.2** | **ug/L** | **25.0** | | **104** | **17-163** | | **200** |
| **Indeno(1,2,3-cd)pyrene** | **24** | **0.6** | **ug/L** | **25.0** | | **98** | **0.1-171** | | **200** |
| **Benzo(b)fluoranthene** | **24** | **0.3** | **ug/L** | **25.0** | | **96** | **24-159** | | **200** |
| **Benzo(k)fluoranthene** | **23** | **0.2** | **ug/L** | **25.0** | | **93** | **11-162** | | **200** |
| *Surrogate: Terphenyl-d14* | *23* | | ug/L | *25.0* | | *94* | *18.3-152* | | |
| **Batch BFC0404 - WDOE NWTPH-Dx_(1997)** | | | | | | | | | |
| **Blank (BFC0404-BLK1)** | | | | Prepared: 31-Mar-22 Analyzed: 01-Apr-22 | | | | | |
| **BFC0404-BLK1** | | | | | | | | | |
| **Diesel Range Hydrocarbons** | **100 U** | **100** | **ug/L** | | | | | | |
| *Surrogate: Terphenyl-d14* | *42* | | ug/L | *50.0* | | *84.8* | *50-150* | | |
| *Surrogate: 2-Fluorobiphenyl* | *32* | | ug/L | *50.0* | | *64.7* | *50-150* | | |
| **LCS (BFC0404-BS1)** | | | | Prepared & Analyzed: 31-Mar-22 | | | | | |
| **BFC0404-BS1** | | | | | | | | | |
| **Diesel Range Hydrocarbons** | **1200** | **100** | **ug/L** | **1000** | | **120** | **50-150** | | **200** |
| *Surrogate: Terphenyl-d14* | *44* | | ug/L | *50.0* | | *88.5* | *50-150* | | |
| *Surrogate: 2-Fluorobiphenyl* | *34* | | ug/L | *50.0* | | *67.7* | *50-150* | | |

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 21-Apr-22 08:48 |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| **Tacoma Public Utilities** | Project: **Kosmos** | |
| 3628 S 35th St | Project Number: [none] | **Reported:** |
| Tacoma WA, 98409 | Project Manager: Matt Peter | 21-Apr-22 08:48 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte Not Detected at or above the associated value |
| UJ | Analyte Not Detected at or above the associated estimated value |
| J | The analyte was positively identified. The associated value is an estimate. For BOD Analysis: The sample dilutions set-up for the BOD analysis did not meet the oxygen depletion criteria of at least 2 mg/l dissolved oxygen depletion. Therefore the reported BOD result is estimated biased high |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| E | Analyte was determined above the upper quantitation range of the method. The associated value is an estimate. |
| NJ | There is evidence the analyte is present. The associated value is an estimate. |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |
| H | The sample dilutions set up for the BOD analysis failed to meet the criteria of a residual dissolved oxygen of at least 1 mg/l. Therefore actual concentration is likely greater than the reported result. |

# Chain of Custody

City of Tacoma Environmental Services
326 East D Street
Tacoma
WA, 98421-1801
phone (253) 502-2130
fax (253) 502-2170



Lab Work Order Number 2203070

| Client Name | Project Name |
|---|---|
| Tacoma Public Utilities | Kosmos |
| Client Contact | Project Number |
| [redacted] / Matt Peter | |
| Address | Project Description |
| 3628 S 35th St | Water sheen response monitoring |
| City | PO Number |
| Tacoma | |
| State/Zip | Sampler Signatures |
| WA, 98409 | |
| Phone / Email | |
| [redacted] 253-208-2814 / mpeter@cityoftacoma.org | |
| Sampler | |
| Ben Caviness | |

Requested Analyses

| Sample Name or Field ID | Sampled Date | Sampled Time | Sample Type | Matrix Code | Container Count | Preservation Code | Arsenic, Total 200.8::Chromium, Total 200.8::Copper, Total 200.8::Lead, Total 200.8::Nickel, Total 200.8::Zinc, Total 200.8 | NWTPH_DX::NWTPH_G | S625.1_BNA | VOA_624.1_BTEX | Mercury, Total LR 245.7 | Solids, Total Suspended SM2540D | Cr6+ Hexavalent Chromium SM3500 | | | Sample Number | Sample Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | HNO3 / HCl / Cool / HCl / HCl / Cool | | | | | | | | | | | |
| Trip Blank | 3/29 | 9:20 | F | W | 1 | | | | | | | | | | | | |
| ~~SH2-22 Sample 4~~ | ~~3/29~~ | ~~9:20~~ | ~~G~~ | ~~W~~ | | 5C 3/29 | 3/29/22 | | | | | | 3/29/22 | | | | |
| SH2-22 Sample 4 | 3/29 | 9:20 | G | W | 8 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | | | | | |

Requested Turn Around

Rush requests subject to additional charge.
Rush requests subject to lab approval.

Standard (days)
Expedited (days)
Due Date

| Relinquished By | Received By | Date/Time | Comments |
|---|---|---|---|
| Ben Caviness | [redacted] | 3/29/22 13:14 | High amount of organic debris in Sample |
| Relinquished By | Received By | Date/Time | |
| Relinquished By | Received By | Date/Time | |
| Cooler Numbers and Temperatures | | | |

Matrix Codes: W=Water

Preserv. Codes: AHCL=5mL/L 12 N HCl,AHCL=HCl to pH<2, Cool <6°C,AN=Do Right Away,AN=HNO3 to pH<2, Cool <6°C,Cool=Cool <6°C

Cont. Codes =1 L WM HDPE, =1L BR AG, =1L BR AG HCl, =250 mL FP HCl, =250 mL WM HDPE HNO3, =40 mL VOA HCl, =No Container

Monica Herbert 4/4/02

# APPENDIX B
# Environmental Justice Reports

**TABLE B-1**

**WASHINGTON STATE DEPARTMENT OF HEALTH ENVIRONMENTAL HEALTH DISPARITIES SUMMARY**

FORMER KOSMOS MILL

MORTON, WASHINGTON

| Environmental Health Disparities V 2.0 | | Risk Rank (Scaled 1 to 10) |
|---|---|---|
| Environmental Exposures (1) | Diesel Exhaust PM2.5 Emissions | 1 |
| | Ozone Concentration | 9 |
| | PM2.5 Concentration | 1 |
| | Proximity to Heavy Traffic Roadways | 1 |
| | Toxic Releases from Facilities (RSEI Model) | 1 |
| Environmental Effects (1) | Lead Risk From Housing (%) | 8 |
| | Proximity to Hazardous Waste Treatment Storage and Disposal Facilities (TSDFs) | 1 |
| | Proximity to National Priorities List Facilities (Superfund Sites) | 1 |
| | Proximity to Risk Management Plan (RMP) Facilties | 1 |
| | Wastewater Discharge | - |
| Socioeconomic Factors (8) | ACS: Limited English (LEP) | 3 |
| | No High School Diploma (%) | 9 |
| | People of Color (Race/Ethnicity) | 1 |
| | Population Living in Poverty <=185% of Federal Poverty Level (%) | 9 |
| | Transportation Expense | 10 |
| | Unaffordable Housing (>30% of Income) | 6 |
| | Unemployed (%) | 10 |
| Sensitive Populations (6) | Death from Cardiovascular Disease | 10 |
| | Low Birth Weight - Combined (%) | 1 |

# EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

## Lewis County, WA

Blockgroup: 530419719003
Population: 1,644
Area in square miles: 42.82

A3 Landscape




### LANGUAGES SPOKEN AT HOME

| LANGUAGE | PERCENT |
|---|---|
| English | 96% |
| Spanish | 3% |
| German or other West Germanic | 1% |
| Total Non-English | 4% |

### COMMUNITY INFORMATION

- Low income: 46 percent
- People of color: 14 percent
- Less than high school education: 16 percent
- Limited English households: 0 percent
- Unemployment: 28 percent
- Persons with disabilities: 19 percent
- Male: 52 percent
- Female: 48 percent
- 74 years — Average life expectancy
- $20,791 — Per capita income
- Number of households: 602
- Owner occupied: 83 percent

### BREAKDOWN BY RACE

- White: 86%
- Black: 0%
- American Indian: 1%
- Asian: 0%
- Hawaiian/Pacific Islander: 0%
- Other race: 0%
- Two or more races: 7%
- Hispanic: 7%

### BREAKDOWN BY AGE

| | |
|---|---|
| From Ages 1 to 4 | 6% |
| From Ages 1 to 18 | 21% |
| From Ages 18 and up | 79% |
| From Ages 65 and up | 27% |

### LIMITED ENGLISH SPEAKING BREAKDOWN

| | |
|---|---|
| Speak Spanish | 0% |
| Speak Other Indo-European Languages | 0% |
| Speak Asian-Pacific Island Languages | 0% |
| Speak Other Languages | 0% |

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

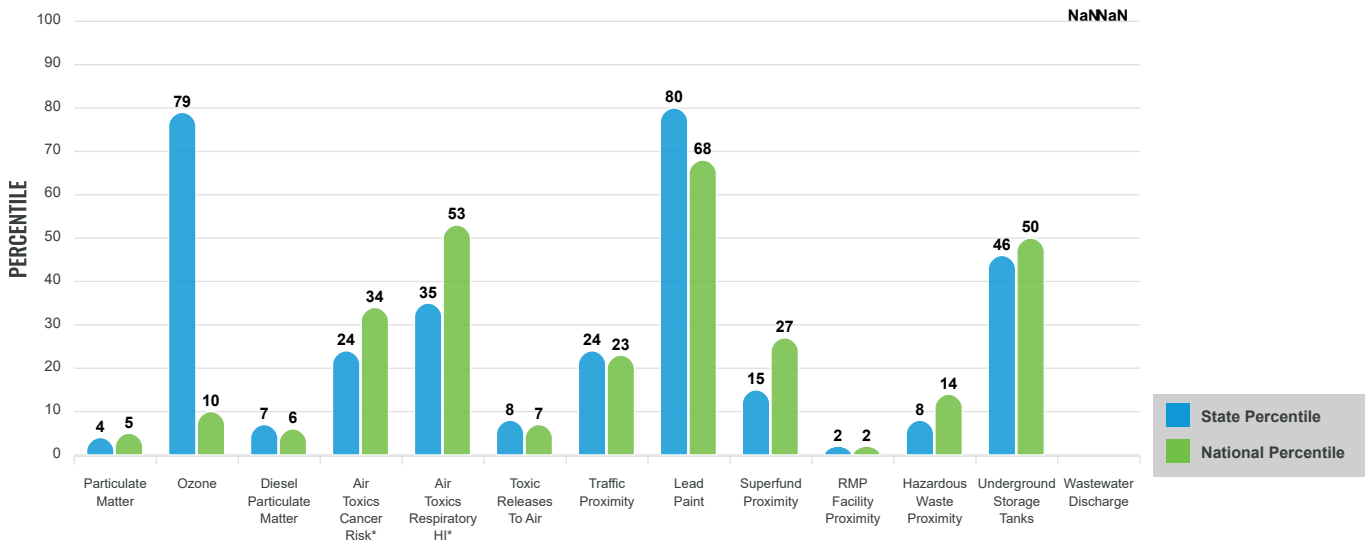
# Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

## EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

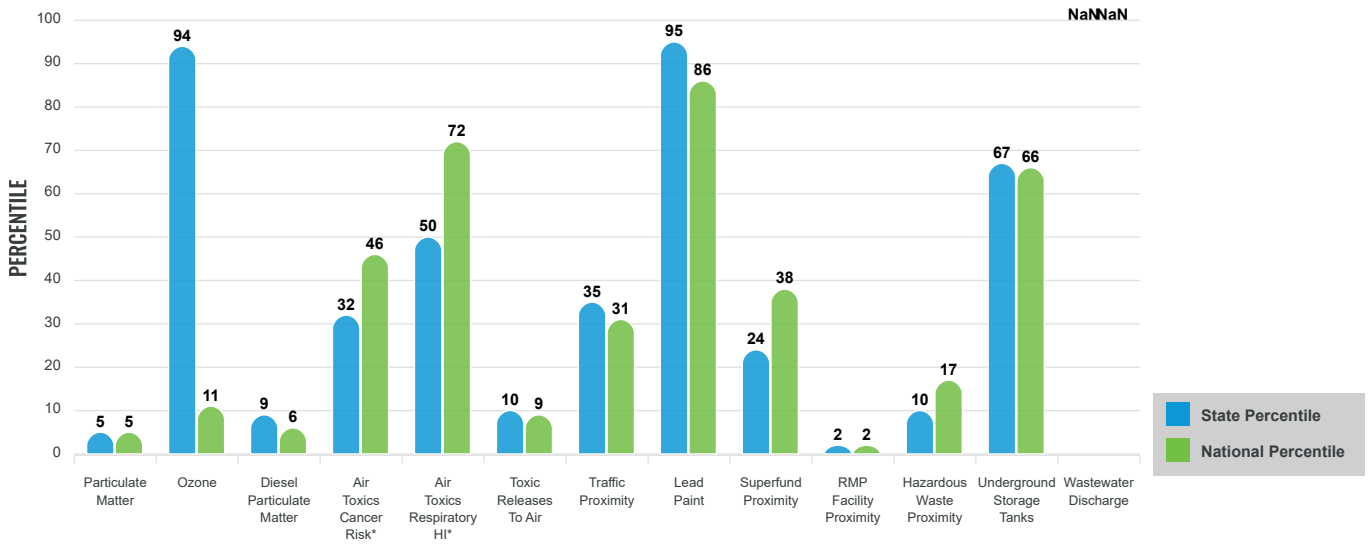
### EJ INDEXES FOR THE SELECTED LOCATION




## SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

### SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION




These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for Blockgroup: 530419719003

# EJScreen Environmental and Socioeconomic Indicators Data

| SELECTED VARIABLES | VALUE | STATE AVERAGE | PERCENTILE IN STATE | USA AVERAGE | PERCENTILE IN USA |
|---|---|---|---|---|---|
| **POLLUTION AND SOURCES** | | | | | |
| Particulate Matter (µg/m$^3$) | 4.72 | 7.02 | 2 | 8.08 | 2 |
| Ozone (ppb) | 52.9 | 49.8 | 73 | 61.6 | 5 |
| Diesel Particulate Matter (µg/m$^3$) | 0.0454 | 0.355 | 4 | 0.261 | 3 |
| Air Toxics Cancer Risk* (lifetime risk per million) | 20 | 27 | 2 | 25 | 5 |
| Air Toxics Respiratory HI* | 0.3 | 0.39 | 14 | 0.31 | 31 |
| Toxic Releases to Air | 1.3 | 1,800 | 5 | 4,600 | 4 |
| Traffic Proximity (daily traffic count/distance to road) | 6.9 | 190 | 13 | 210 | 13 |
| Lead Paint (% Pre-1960 Housing) | 0.4 | 0.23 | 77 | 0.3 | 66 |
| Superfund Proximity (site count/km distance) | 0.02 | 0.18 | 9 | 0.13 | 17 |
| RMP Facility Proximity (facility count/km distance) | 0.018 | 0.4 | 1 | 0.43 | 1 |
| Hazardous Waste Proximity (facility count/km distance) | 0.041 | 1.6 | 4 | 1.9 | 7 |
| Underground Storage Tanks (count/km$^2$) | 0.39 | 6.3 | 32 | 3.9 | 37 |
| Wastewater Discharge (toxicity-weighted concentration/m distance) | N/A | 0.024 | N/A | 22 | N/A |
| **SOCIOECONOMIC INDICATORS** | | | | | |
| Demographic Index | 30% | 28% | 63 | 35% | 51 |
| Supplemental Demographic Index | 23% | 12% | 94 | 14% | 85 |
| People of Color | 14% | 32% | 22 | 39% | 30 |
| Low Income | 46% | 24% | 88 | 31% | 77 |
| Unemployment Rate | 28% | 5% | 99 | 6% | 98 |
| Limited English Speaking Households | 0% | 4% | 0 | 5% | 0 |
| Less Than High School Education | 16% | 8% | 84 | 12% | 73 |
| Under Age 5 | 6% | 6% | 62 | 6% | 63 |
| Over Age 64 | 27% | 16% | 86 | 17% | 84 |
| Low Life Expectancy | 24% | 18% | 96 | 20% | 87 |

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

### Sites reporting to EPA within defined area:

| | |
|---|---|
| Superfund | 0 |
| Hazardous Waste, Treatment, Storage, and Disposal Facilities | 0 |
| Water Dischargers | 13 |
| Air Pollution | 2 |
| Brownfields | 0 |
| Toxic Release Inventory | 1 |

### Other community features within defined area:

| | |
|---|---|
| Schools | 2 |
| Hospitals | 0 |
| Places of Worship | 0 |

### Other environmental data:

| | |
|---|---|
| Air Non-attainment | No |
| Impaired Waters | Yes |

| | |
|---|---|
| Selected location contains American Indian Reservation Lands* | No |
| Selected location contains a "Justice40 (CEJST)" disadvantaged community | Yes |
| Selected location contains an EPA IRA disadvantaged community | Yes |

*Report for Blockgroup: 530419719003*

# EJScreen Environmental and Socioeconomic Indicators Data

## HEALTH INDICATORS

| INDICATOR | HEALTH VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Low Life Expectancy | 24% | 18% | 96 | 20% | 87 |
| Heart Disease | 10 | 5.3 | 99 | 6.1 | 97 |
| Asthma | 11.8 | 10.5 | 90 | 10 | 89 |
| Cancer | 8.5 | 6.3 | 92 | 6.1 | 93 |
| Persons with Disabilities | 23% | 13.1% | 94 | 13.4% | 92 |

## CLIMATE INDICATORS

| INDICATOR | HEALTH VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Flood Risk | 33% | 11% | 92 | 12% | 92 |
| Wildfire Risk | 0% | 12% | 0 | 14% | 0 |

## CRITICAL SERVICE GAPS

| INDICATOR | HEALTH VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Broadband Internet | 26% | 9% | 94 | 14% | 84 |
| Lack of Health Insurance | 9% | 6% | 76 | 9% | 61 |
| Housing Burden | No | N/A | N/A | N/A | N/A |
| Transportation Access | Yes | N/A | N/A | N/A | N/A |
| Food Desert | No | N/A | N/A | N/A | N/A |

Footnotes

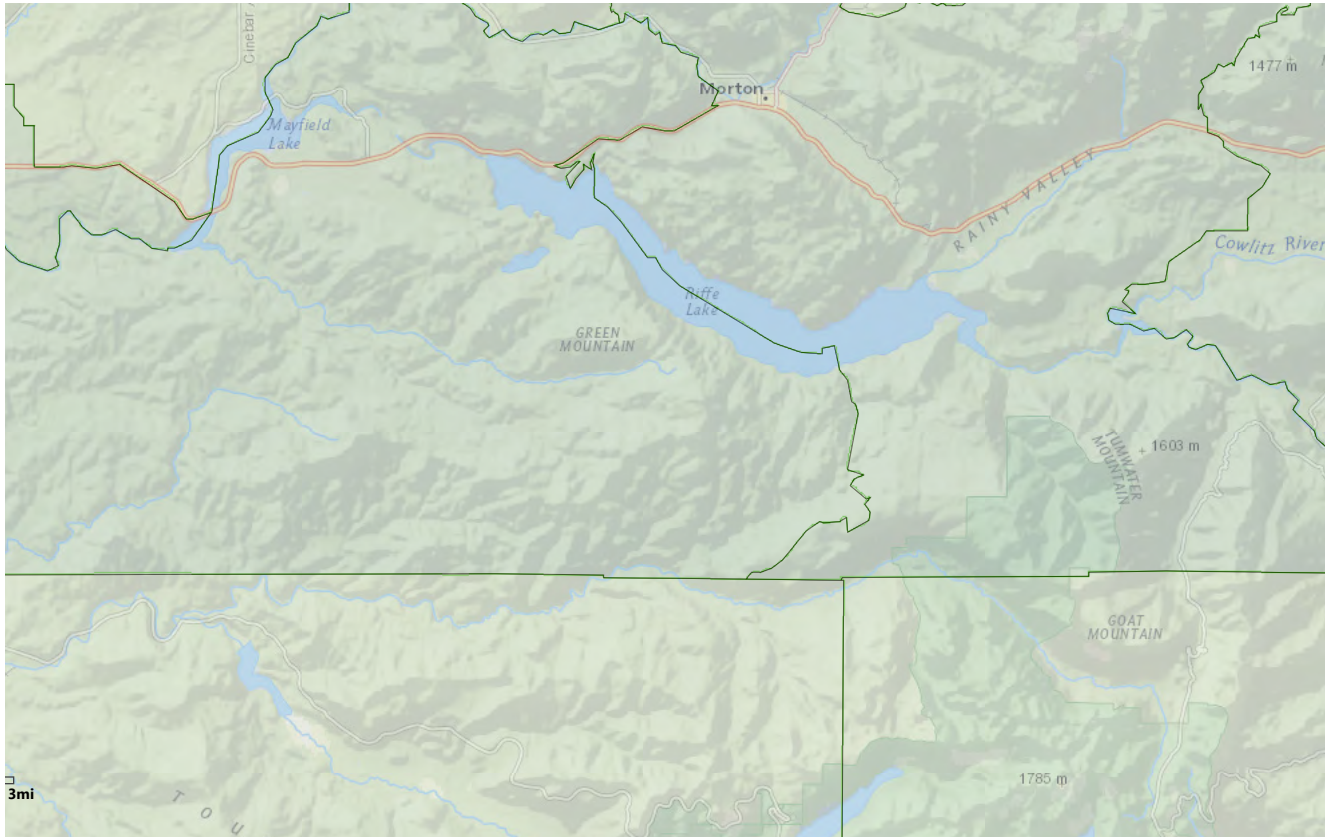
*Report for Blockgroup: 530419719003*

Washington State Department of Health

**Selection: Environmental Health Disparities V 2.0** **Date: 11/16/2023 at 11:49 AM**

**Environmental Exposures, Environmental Effects, Socioeconomic Factors, Sensitive Populations**

**Legend: (High)** 10 9 8 7 6 5 4 3 2 1 **(Low)**




## Legend

- Airport Runways
- Care Facilities - Adult Family Homes
- Care Facilities - Nursing Homes
- City Limits
- Climate Projections ~2050
- County Boundaries
- DCYF Licensed Childcare Centers
- Electric Utilities - Investor
- Electric Utilities - Public
- Farmworkers Housing
- Former Orchard Lands

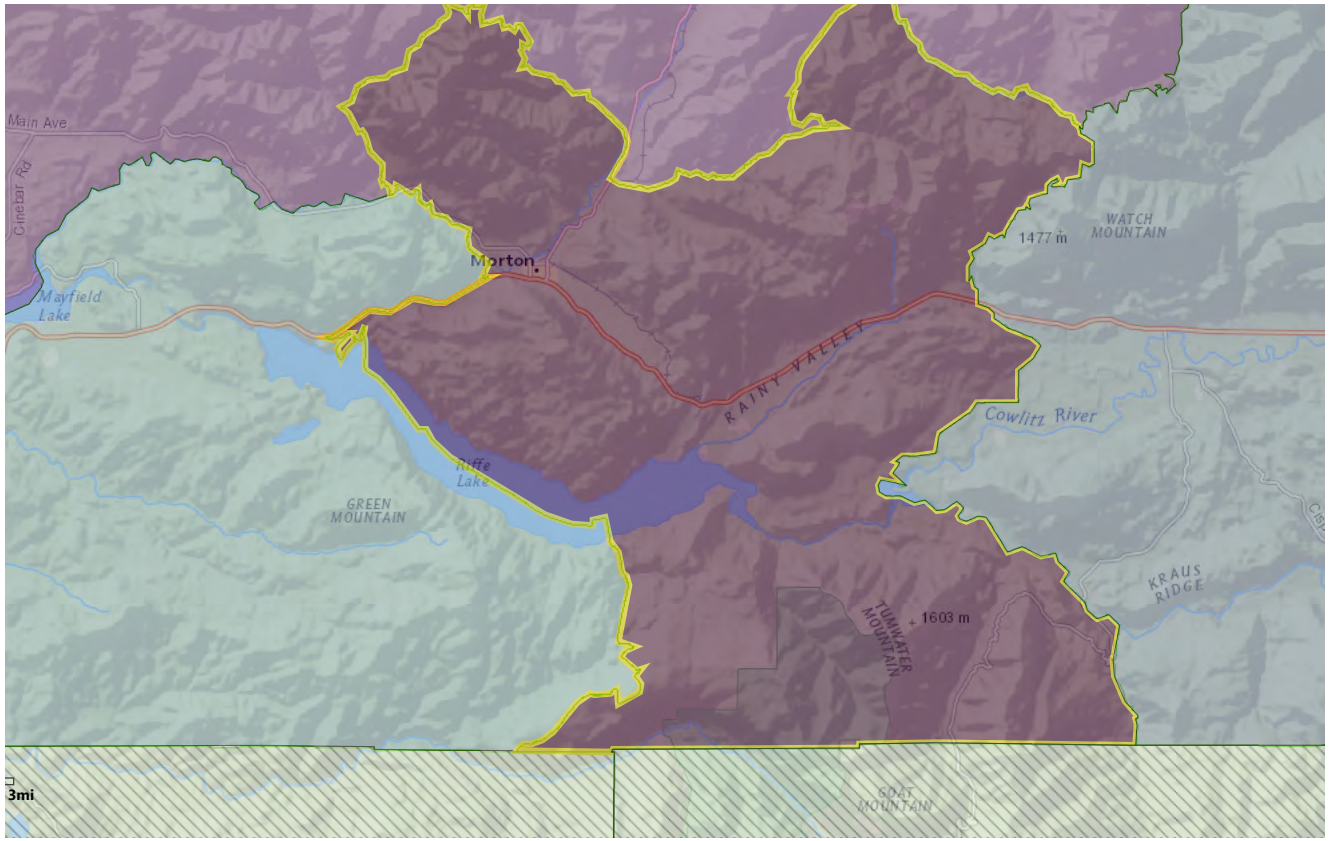

Former Orchard Lands
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Historical Redlining (HOLC)
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Legislative Districts
National Flood Hazard Layer
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WA Ecology Cleanup Sites
Wastewater Dischargers (EPA)
Watershed Boundaries
Smoke score
Wildfire Smoke Cumulative Score (2016-2022)

Washington State Department of Health

**Selection:** **Date: 11/16/2023 at 11:56 AM**

**Environmental Health Disparities V 2.0 -> Sensitive Populations -> Death from Cardiovascular Disease**

**Legend: (High)** 10 9 8 7 6 5 4 3 2 1 **(Low)**




## Legend

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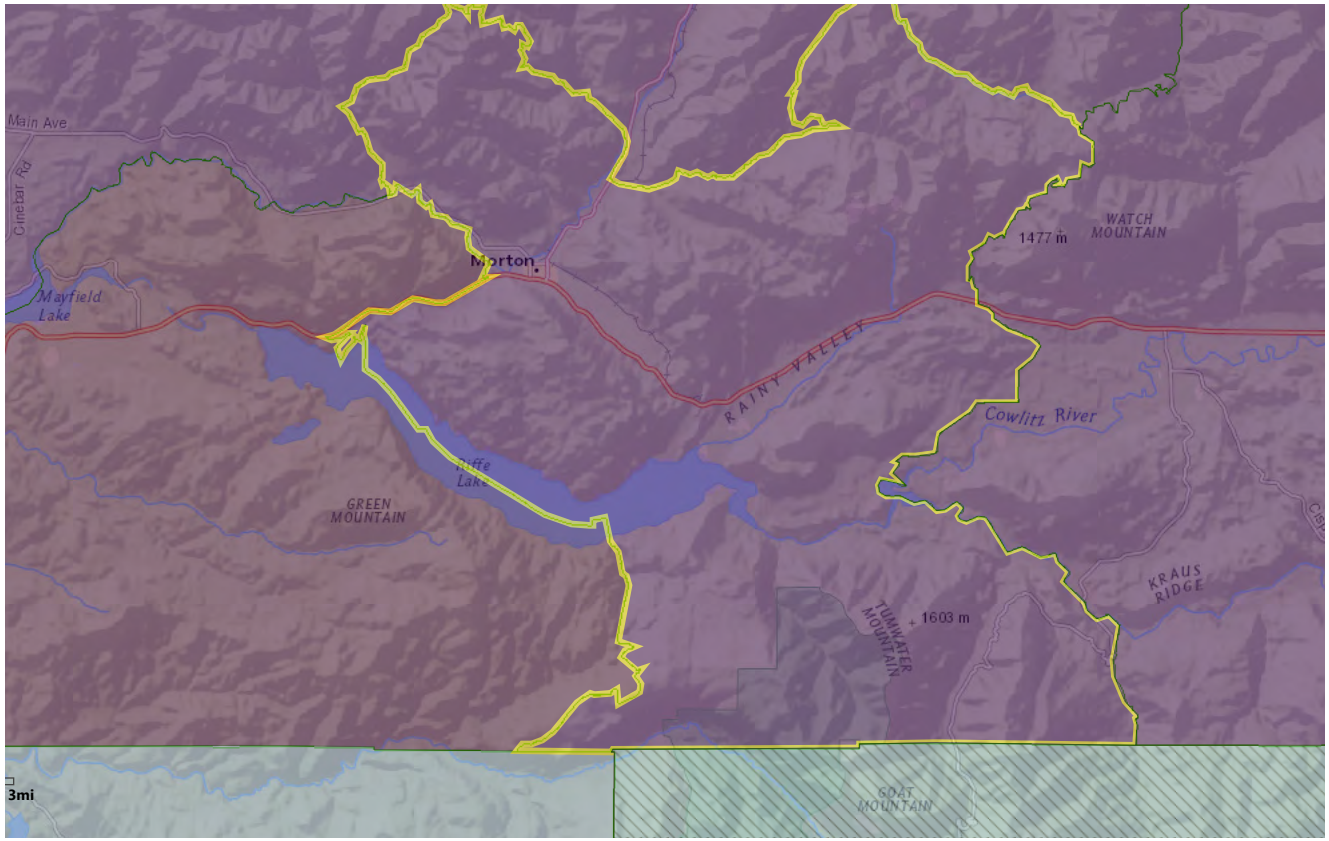

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Smoke score
Wildfire Smoke Cumulative Score (2016-2022)

Washington State Department of Health

**Selection:** **Date: 11/16/2023 at 11:51 AM**

**Environmental Health Disparities V 2.0 -> Socioeconomic Factors -> No High School Diploma (%)**

**Legend: (High)** 10 9 8 7 6 5 4 3 2 1 **(Low)**




## Legend

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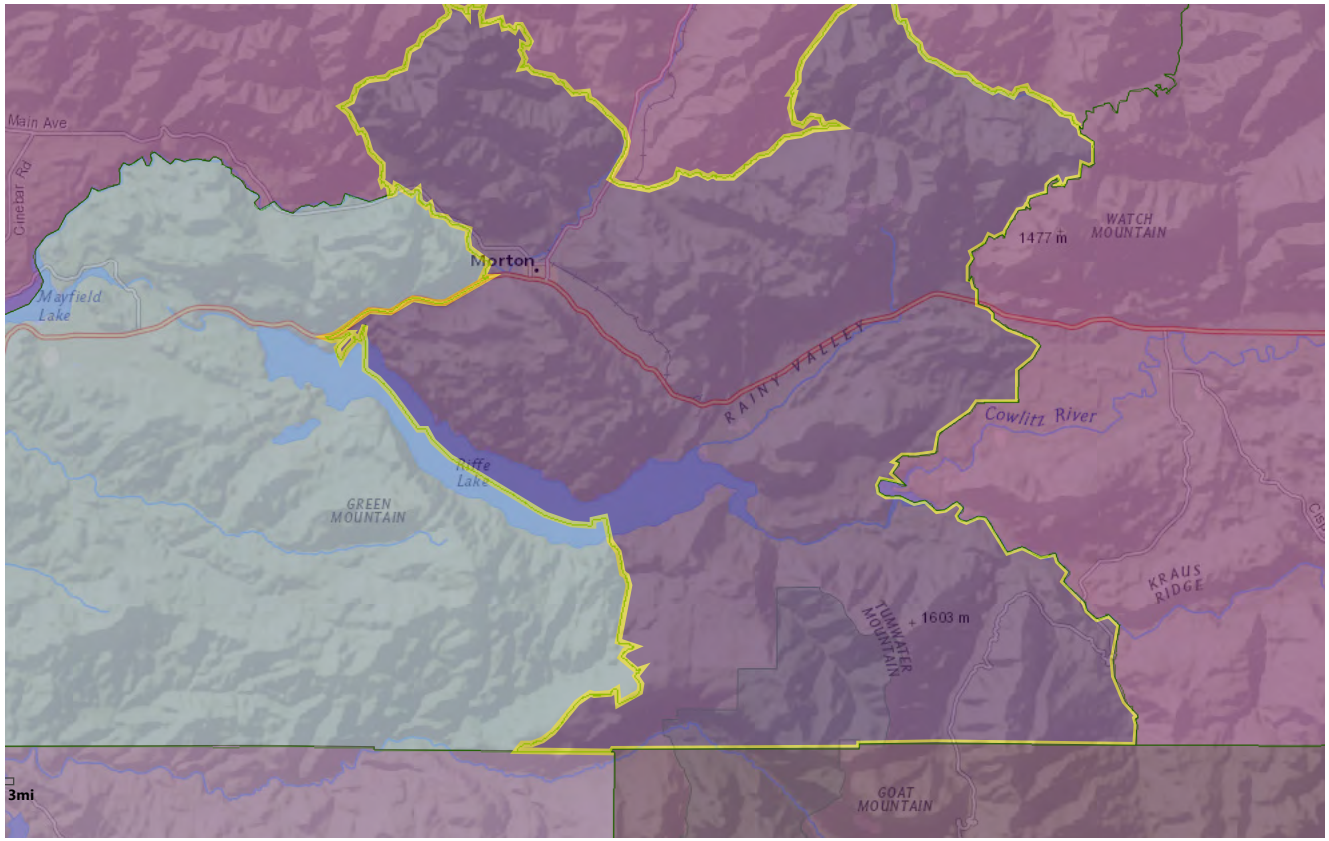

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Smoke score
Wildfire Smoke Cumulative Score (2016-2022)

Washington State Department of Health

**Selection:** **Date: 11/16/2023 at 11:50 AM**

**Environmental Health Disparities V 2.0 -> Environmental Exposures -> Ozone Concentration**

**Legend: (High)** 10 9 8 7 6 5 4 3 2 1 **(Low)**




## Legend

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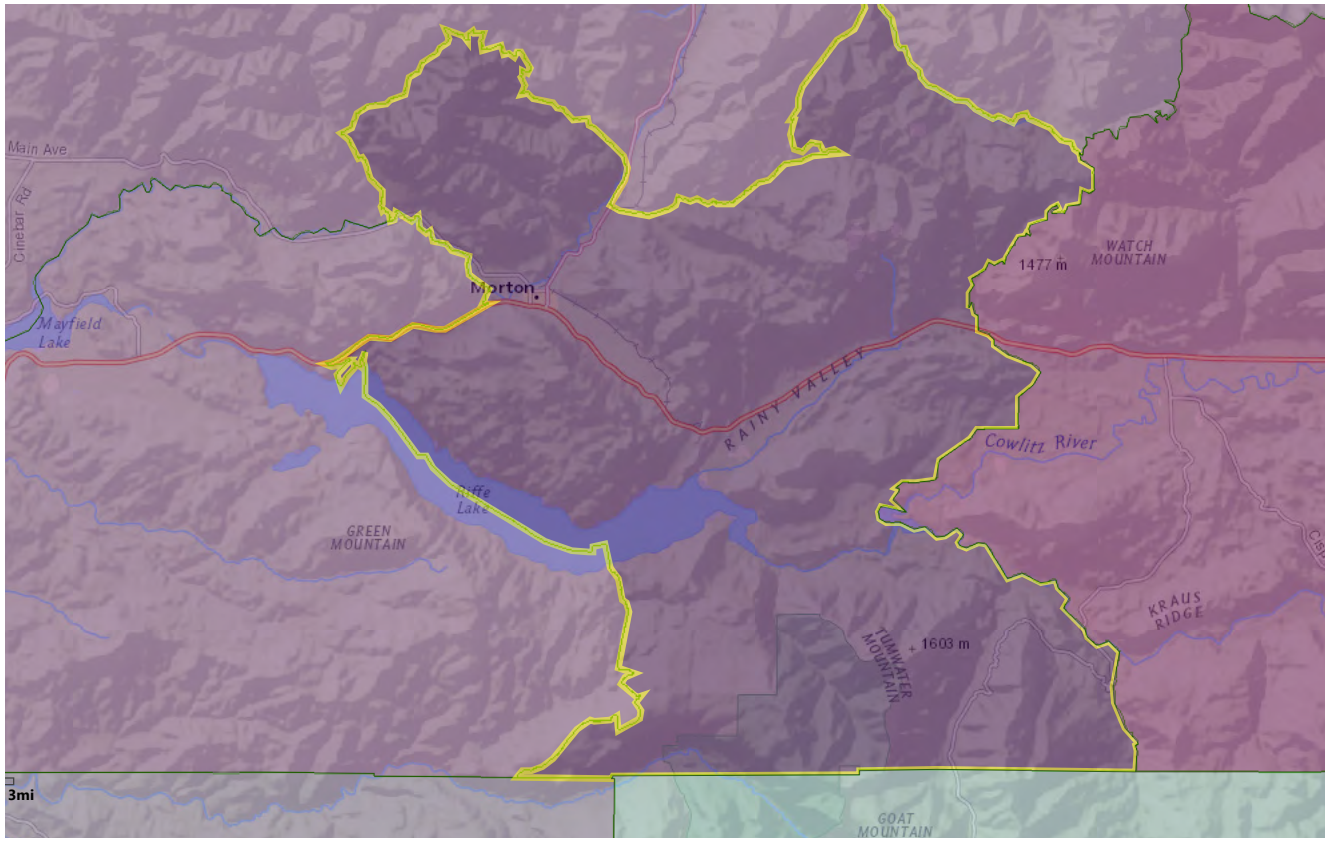
Washington State Department of Health

**Selection:**

**Date: 11/16/2023 at 11:55 AM**

**Environmental Health Disparities V 2.0 -> Socioeconomic Factors -> Population Living in Poverty <=185% of Federal Poverty Level (%)**

**Legend: (High)** 10 9 8 7 6 5 4 3 2 1 **(Low)**




## Legend

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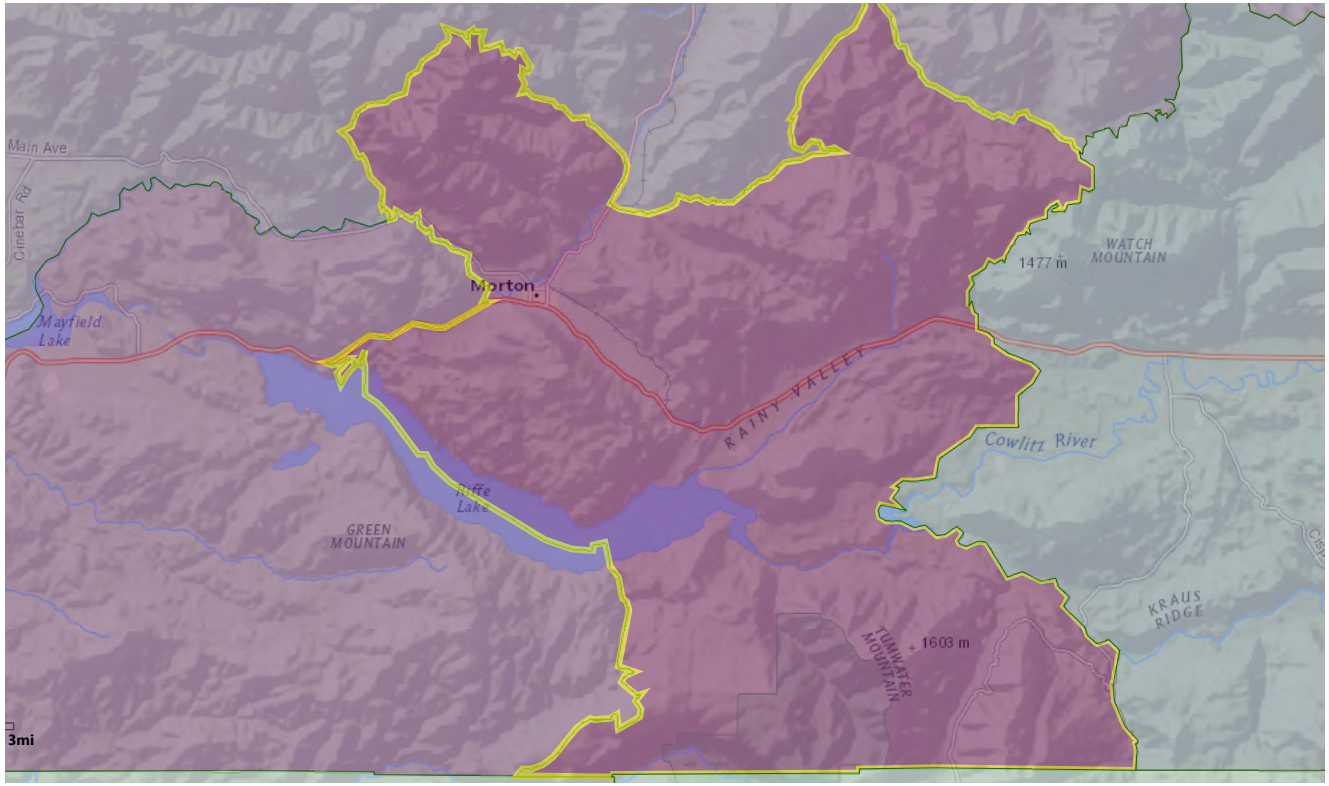

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Wildfire Smoke Cumulative Score (2016-2022)

Washington State Department of Health

**Selection: Environmental Health Disparities V 2.0 -> Socioeconomic Factors** **Date: 11/16/2023 at 11:51 AM**

**ACS: Limited English (LEP), No High School Diploma (%), People of Color (Race/Ethnicity), Population Living in Poverty <=185% of Federal Poverty Level (%), Transportation Expense, Unaffordable Housing (>30% of Income), Unemployed (%)**

**Legend: (High)** 10 9 8 7 6 5 4 3 2 1 **(Low)**




## Legend

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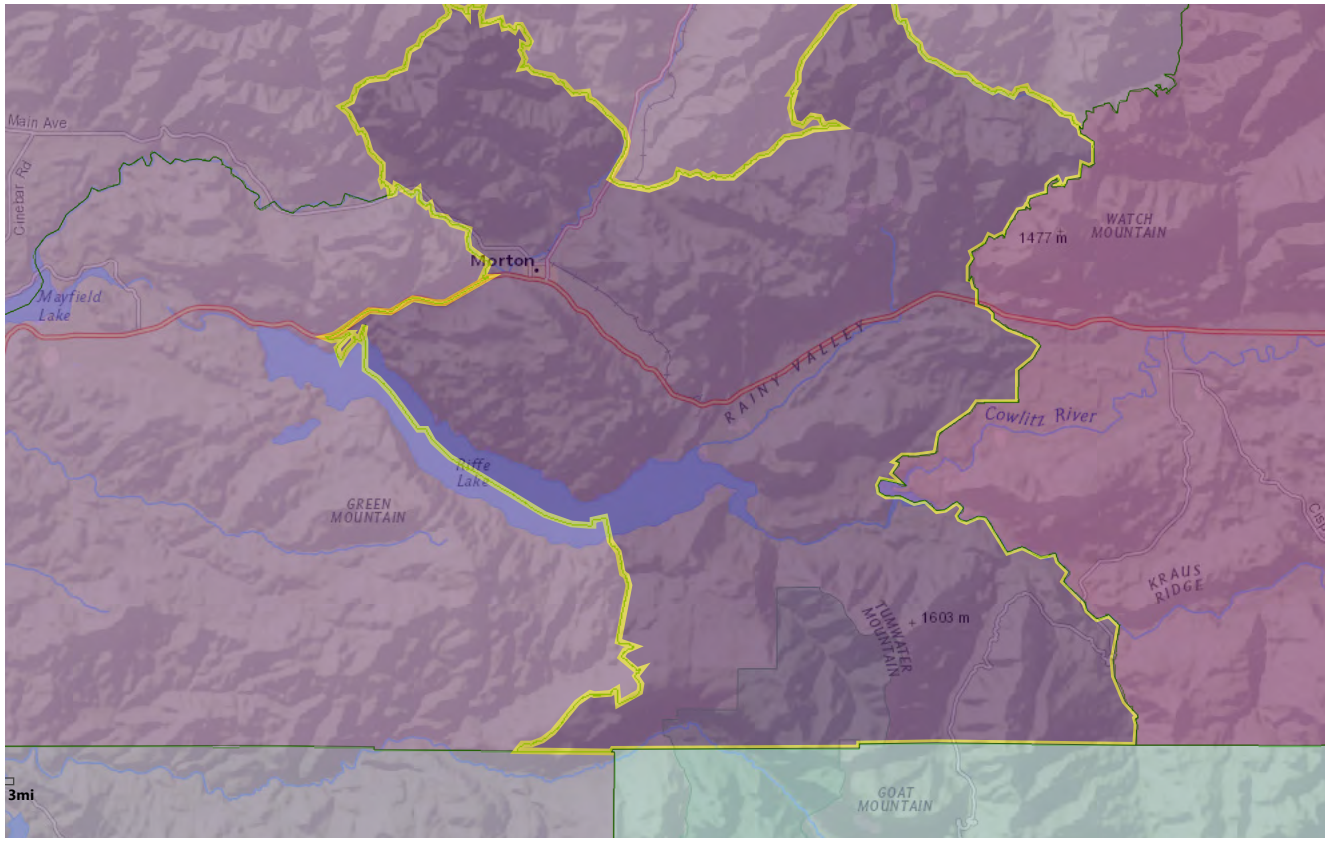

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Wildfire Smoke Cumulative Score (2016-2022)

Washington State Department of Health

**Selection:** **Date: 11/16/2023 at 11:55 AM**

**Environmental Health Disparities V 2.0 -> Socioeconomic Factors -> Transportation Expense**

**Legend: (High)** 10 9 8 7 6 5 4 3 2 1 **(Low)**




## Legend

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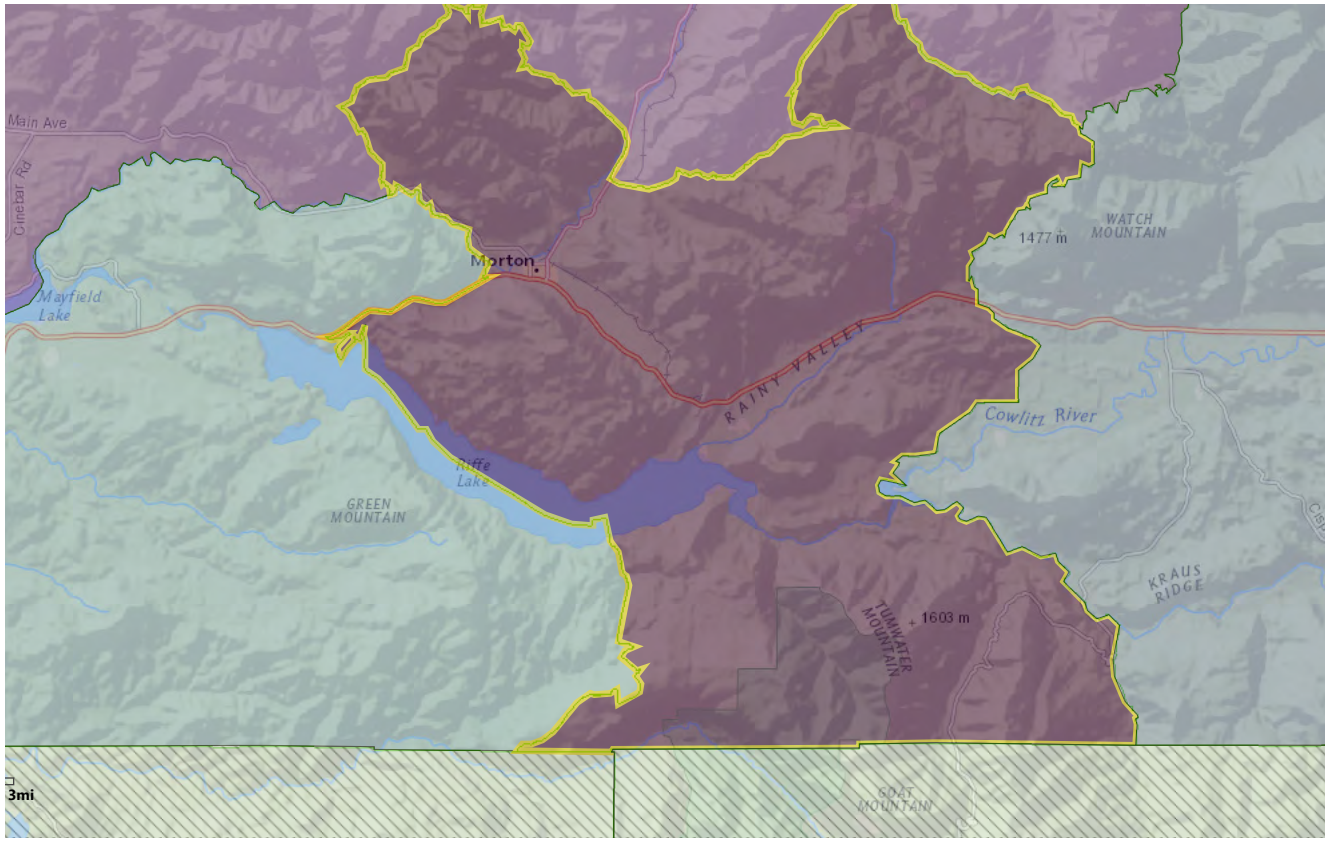

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Wildfire Smoke Cumulative Score (2016-2022)

Washington State Department of Health

**Selection:** **Date: 11/16/2023 at 11:56 AM**

**Environmental Health Disparities V 2.0 -> Socioeconomic Factors -> Unemployed (%)**

**Legend: (High)** 10 9 8 7 6 5 4 3 2 1 **(Low)**




## Legend

- Airport Runways
- Care Facilities - Adult Family Homes
- Care Facilities - Nursing Homes
- City Limits
- Climate Projections ~2050
- County Boundaries
- DCYF Licensed Childcare Centers
- Electric Utilities - Investor
- Electric Utilities - Public
- Farmworkers Housing
- Former Orchard Lands


Former Orchard Lands
Hazardous Waste Sites (EPA)
Historical Redlining (HOLC)
Hospitals
Legislative Districts
National Flood Hazard Layer
Prisons
Railroads
Rural-Urban Classification
Superfund (NPL) Sites (EPA)
Arsenic
Tacoma Smelter Plume
Top Student Home Languages
Toxic Release Inventory Sites (EPA)
Tribal Boundaries
Tribal Health Services
WA Ecology Cleanup Sites
Wastewater Dischargers (EPA)
Watershed Boundaries
Smoke score
Wildfire Smoke Cumulative Score (2016-2022)

# APPENDIX C
# Field Methods and Exploration Logs

# APPENDIX C

# Field Exploration Methods and Exploration Logs

This appendix documents the field exploration methods Haley & Aldrich, Inc. (Haley & Aldrich) used to further assess the environmental quality of the soil, sediment, groundwater, and surface water at the former Kosmos Mill (Site). The sections are:

- Explorations and Their Location;
- Sonic Borings;
- Test Pits;
- Soil and Sediment Sampling Procedures;
- Soil and Sediment Screening and Analysis;
- Groundwater Level Measurements;
- Monitoring Well Installation and Development;
- Grab and Quarterly Groundwater Sampling Procedures;
- Surface Water Sampling Procedures
- Sample Handling and Laboratory Analysis; and
- Investigation-Derived Waste Storage and Disposal.

## Explorations and Their Location

Subsurface explorations for the Site investigation and characterization were sonic borings and test pits. Grab groundwater samples were collected from seven of the borings. Eight monitoring wells were installed, four shallow and four deep, with groundwater samples collected from each installed well. Exploration logs in this appendix show our interpretation of the sampling and testing data. The logs indicate the depth at which the physical characteristics of soils change; however, the change may be gradual. In the field, we classified the samples taken from the explorations according to the methods on Figure C-1, Key to Exploration Logs. This figure's legend explains the symbols and abbreviations used in the logs.

Figure 3 of the main text shows where the explorations were located.

## Sonic Borings

Fifteen sonic borings (B-11 through B-17, MW-1S through MW-4S, and MW-1D through MW-4D) were drilled to depths of 20 to 60 feet below ground surface (bgs) between June and October 2022. The borings were advanced with an approximately 8-inch-diameter sonic drill using a mobile tracked rig by a licensed driller (Holt Services, Inc. and Anderson Environmental Contracting, LLC) subcontracted to Haley & Aldrich. An environmental engineer from Haley & Aldrich continuously observed the drilling. We obtained soil samples at 5-foot depth intervals. All soil samples were classified in accordance with ASTM International (ASTM) Method D2488, and pertinent characteristics of the subsurface conditions were recorded on boring logs. Detailed logs for each boring are presented at the end of this appendix.

The sonic drill was pressure washed between borings to prevent cross-contamination.

## Test Pits

Forty-six test pits were excavated to depths of 10 to 20 feet bgs between May 2 through 6, 2022. The test pits were excavated using an excavator by a licensed operator (Rivers Edge Environmental Services Inc.) contracted to Tacoma Power. An environmental engineer from Haley & Aldrich continuously observed the excavation. We obtained soil samples at 2.5- to 5-foot depth intervals. All soil samples were classified in accordance with ASTM Method D2488, and pertinent characteristics of the subsurface conditions were recorded on boring logs. Detailed logs for each boring are presented at the end of this appendix.

## Sediment Sampling

Sediment sampling was conducted on April 27 and October 17, 2022. Five sediment samples (SS-1, SS-4, SS-7, SS-8, and SS-11) were collected in April, but due to unsafe conditions, sediment samples were unable to be collected from the other planned locations. Twelve sediment samples were analyzed from all the planned locations (SS-1 through SS-12) in October, except for SS-7, which had to be moved due to refusal at the original sample location. Sediment samples were collected at 6-inch intervals below the mudline until refusal was met.

## Soil and Sediment Sampling Procedures

Soil samples were collected for chemical analysis directly from the sonic drill sleeve with a clean stainless-steel spoon and/or clean disposable nitrile gloves and placed in pre-cleaned, laboratory-supplied glass sample jars and 40-milliliter volatile organics analysis (VOA) bottles supplied by the laboratory. Sufficient soil was removed to overfill the 4-ounce glass sample jars. For all soil and sediment samples, VOA bottles were filled with a 5-gram soil plug, according to U.S. Environmental Protection Agency Method 5035 procedures. The jars were sealed and labeled. Filled sample jars were stored in an ice-chilled cooler and submitted to the analytical laboratory under chain-of-custody protocols.

## Soil and Sediment Screening and Analysis

Field screening results were used as a general guideline to identify potential chemical constituents in soil and sediment samples. In addition, field screening results were used as a basis for selecting soil samples for chemical analysis.

Soil samples were field screened at 2.5- to 5-foot depth intervals, while all sediment samples were screened, for evidence of volatile organic compound-related impacts using (1) visual and olfactory observations, (2) sheen screening, and (3) headspace vapor screening using a MiniRAE photoionization detector (PID). The effectiveness of field screening varies with temperature, moisture content, organic content, soil type, and age of the constituents. Visual examination consists of inspecting the soil and sediment for evidence of discoloration, staining, and/or abnormal components. Visual screening is generally more effective when impacts are related to heavy petroleum hydrocarbons, such as motor or hydraulic oil, or when hydrocarbon concentrations are high.

We tested water sheen by placing a small volume of soil/sediment in a pan of water and observing the water surface for signs of sheen. Sheens were classified as follows:

- No sheen (NS) - No visible sheen on water surface.
- Slight sheen (SS) - Light colorless film, spotty to globular; spread is irregular, not rapid; areas of no sheen remain; film dissipates rapidly.
- Moderate sheen (MS) - Light to heavy film, may have some color or iridescence; globular to stringy; spread is irregular to flowing; few remaining areas of no sheen on water surface.
- Heavy sheen (HS) - Heavy colorful film with iridescence; stringy; spread is rapid; sheen flows off the sample; most of the water surface may be covered with sheen.

Headspace vapor screening is intended to indicate the presence of volatile organic vapors. It involves placing a soil/sediment sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil/sediment to the air trapped in the bag. The PID probe is then inserted in the bag and the instrument measures the concentration of organic vapors in the sample headspace. The highest vapor reading for each sample is then recorded on the boring log. The PID measures concentrations in parts per million (ppm), is calibrated to isobutylene, and can typically quantify organic vapor concentrations in the range of 0 to 1,000 ppm.

All field screening observations were recorded on the boring logs, and this information was used to select which samples to submit for chemical analysis. In general, samples with the highest readings were selected for analysis.

## Groundwater Level Measurements

Water level measurements were recorded before groundwater samples were collected on October 24 and November 3, 2022. Depth to water was measured using a water level indicator or oil-water interface probe. The probe was cleaned between measurements to prevent cross-contamination of wells.

## Monitoring Well Installation and Development

Eight groundwater monitoring wells were installed in June and October 2022. Four shallower groundwater monitoring wells were installed on June 27, 2022, and four deeper groundwater monitoring wells were installed between October 24 and 31, 2022. All monitoring wells were installed in general accordance with the Minimum Standards for Construction and Maintenance of Wells (Washington Administrative Code 173-160).

Monitoring wells were constructed with 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) with 10 feet of screened casing. Shallow groundwater monitoring wells were screened at a range of 5 to 16 feet bgs, and deeper wells were screened at a range of depths between 46 and 60 feet bgs. A clean silica sand pack was placed about 1 foot above the screened section, and a minimum 3-foot bentonite seal was placed above the sand to within about 1 foot of the ground surface. A concrete surface seal secured a flush-mounted, traffic-rated monument. A watertight locking cap and lock secured the wellhead, and bolts were used to secure the monument cover. All monuments were permanently marked with well identification numbers.

Following installation, the monitoring wells were developed immediately. Each well was developed by purging groundwater from the well using a submersible pump. Development was considered to be complete after the water from the well was visibly clear.

## Grab and Quarterly Groundwater Sampling Procedures

Grab groundwater samples were collected from seven borings (B-11 through B-17) on October 24 to October 31, 2022, and samples were submitted for chemical analysis. Grab groundwater samples were collected from temporary wells installed in each borehole location. This consisted of placing a 2-inch-diameter, Schedule 40 slotted screen (0.01-inch or 0.02-inch machine-slotted screen) with PVC riser into the boring and allowing the system to rest until the water levels stabilized. A temporary well was installed by lowering a 5-foot prepacked screen section to a depth of 45 to 50 feet bgs.

Prior to sampling, field personnel recorded the depth to water in the borings using a water level indicator and approximately 5 to 10 gallons of water was purged to reduce turbidity. Following the initial purge, water quality parameters were measured using a water quality parameter meter with a flow-through cell. The temporary well was purged until conventional parameters (temperature, pH, and conductivity) varied by less than 10 percent.

Grab groundwater samples were collected directly from the polyethylene tubing (3/8 inch) into the pre-cleaned containers provided by the analytical laboratory. The containers were sealed, labeled, and stored in an ice-chilled cooler and submitted to the chemistry laboratory under chain-of-custody protocols.

New monitoring wells were sampled no sooner than 12 hours after development. Groundwater monitoring was conducted on the eight monitoring wells (MW-1S through MW-4S and MW-1D through MW-4D) on a quarterly basis, except for the following:

- Deep wells were not monitored in June 2022, as only the shallow monitoring wells were installed at the time of the event.
- Due to low water levels in November 2022 and August 2023, the shallow wells were not monitored during these events.

Shallow wells were sampled a total of three times and deep wells were sampled a total of four times.

After the groundwater levels were measured, each well will be purged at a low-flow rate using a peristaltic or submersible pump connected to disposable tubing. The tubing inlet was placed approximately 1 foot below the top of well screen or if the water table was below the top of the screened interval, then the tubing inlet was placed 1 foot below the monitoring well's water column. To assess the effectiveness of purging, field parameters (including pH, dissolved oxygen, oxidation reduction potential, electrical conductivity, turbidity, and temperature) were measured by means of a flow-through cell. Purging was considered complete after three casing volumes of water had been removed, the well purged dry, or field parameters stabilized to within 10 percent (whichever was less). If the well was purged dry, it was allowed to recover before sampling is performed.

To prevent cross-contamination of the wells, disposable polyethylene tubing was discarded after each use and the pump was refitted with new tubing at each grab groundwater location. The water level indicator and pump were decontaminated between well locations using a non-phosphate-based cleaner and de-ionized water. Decontamination generally consisted of the following:

- Tap-water rinse (may consist of an equivalent high-pressure hot-water rinse). Visible soil to be removed by scrubbing.
- Non-phosphate detergent wash, consisting of a dilute mixture of Liqui-Nox® (or equivalent) and tap water; and
- De-ionized water rinse.

## Surface Water Sampling Procedures

Haley & Aldrich collected six grab surface water samples (two sample events each at SW-1 through SW-3) for chemical analysis on June 29, 2022 and November 3, 2022 from along the creek in areas located upstream of the ravine, adjacent to the protective cap, and downstream of the protective cap. Surface water samples were collected using laboratory-provided containers and a telescopic pole to allow for samples to be taken at the predetermined locations. The surface water samples were taken twice to capture data from both the seasonal high and seasonal low water levels.

## Sample Handling and Laboratory Analysis

At the time of collection, soil and groundwater samples were placed in an ice-chilled cooler and submitted to the laboratory using chain-of-custody protocols. Soil, groundwater samples, and October 2022 sediment samples were submitted to Friedman and Bruya, Inc. (F&B) of Seattle, Washington, for chemical analysis. F&B subcontracted groundwater analyses for low-level mercury and hexavalent chromium to Fremont Analytical, Inc. in Seattle, Washington. The sediment samples collected in April 2022 were submitted to Eurofins Testing in Tacoma, Washington, for chemical analysis.

## Investigation-Derived Waste Storage and Disposal

Investigation-derived waste (IDW) consisted of excess soil cuttings, development and purged groundwater from borings and monitoring wells, decontamination water, and personal protective equipment.

IDW was placed in separately labeled, U.S. Department of Transportation-approved, 30- or 55-gallon steel drums. Associated samples collected from the remedial investigation activities were used to profile the IDW, and the waste was disposed of by ACTenviro Hazardous Waste Disposal Company.

## Sample Description

Identification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field nor laboratory testing unless presented herein. ASTM D 2488 visual-manual identification methods were used as a guide. Where laboratory testing confirmed visual-manual identifications, then ASTM D 2487 was used to classify the soils.

## Relative Density/Consistency

Soil density/consistency in borings is related primarily to the standard penetration resistance (N). Soil density/consistency in test pits and probes is estimated based on visual observation and is presented parenthetically on the logs.

| SAND or GRAVEL Relative Density | N (Blows/Foot) | SILT or CLAY Consistency | N (Blows/Foot) |
|---|---|---|---|
| Very loose | 0 to 4 | Very soft | 0 to 1 |
| Loose | 5 to 10 | Soft | 2 to 4 |
| Medium dense | 11 to 30 | Medium stiff | 5 to 8 |
| Dense | 31 to 50 | Stiff | 9 to 15 |
| Very dense | >50 | Very stiff | 16 to 30 |
| | | Hard | >30 |

## Moisture

| | |
|---|---|
| Dry | Absence of moisture, dusty, dry to the touch |
| Moist | Damp but no visible water |
| Wet | Visible free water, usually soil is below water table |

## USCS Soil Classification Chart (ASTM D 2487)

| Major Divisions | | | Symbols: Graph | Symbols: USCS | Typical Descriptions |
|---|---|---|---|---|---|
| Coarse Grained Soils: More than 50% of Material Retained on No. 200 Sieve | Gravel and Gravelly Soils: More than 50% of Coarse Fraction Retained on No. 4 Sieve | Clean Gravels (<5% fines) | | GW | Well-Graded Gravel; Well-Graded Gravel with Sand |
| | | | | GP | Poorly Graded Gravel; Poorly Graded Gravel with Sand |
| | | Gravels (5-12% fines) | | GW-GM | Well-Graded Gravel with Silt; Well-Graded Gravel with Silt and Sand |
| | | | | GW-GC | Well-Graded Gravel with Clay; Well-Graded Gravel with Clay and Sand |
| | | | | GP-GM | Poorly Graded Gravel with Silt; Poorly Graded Gravel with Silt and Sand |
| | | | | GP-GC | Poorly Graded Gravel with Clay; Poorly Graded Gravel with Clay and Sand |
| | | Gravels with Fines (>12% fines) | | GM | Silty Gravel; Silty Gravel with Sand |
| | | | | GC | Clayey Gravel; Clayey Gravel with Sand |
| | Sand and Sandy Soils: More than 50% of Coarse Fraction Passing No. 4 Sieve | Sands with few Fines (<5% fines) | | SW | Well-Graded Sand; Well-Graded Sand with Gravel |
| | | | | SP | Poorly Graded Sand; Poorly Graded Sand with Gravel |
| | | Sands (5-12% fines) | | SW-SM | Well-Graded Sand with Silt Well-Graded Sand with Silt and Gravel |
| | | | | SW-SC | Well-Graded Sand with Clay; Well-Graded Sand with Clay and Gravel |
| | | | | SP-SM | Poorly Graded Sand with Silt; Poorly Graded Sand with Silt and Gravel |
| | | | | SP-SC | Poorly Graded Sand with Clay; Poorly Graded Sand with Clay and Gravel |
| | | Sands with Fines (>12% fines) | | SM | Silty Sand; Silty Sand with Gravel |
| | | | | SC | Clayey Sand; Clayey Sand with Gravel |
| Fine Grained Soils: More than 50% of Material Passing No. 200 Sieve | Silts | | | ML | Silt; Silt with Sand or Gravel; Sandy or Gravelly Silt |
| | | | | MH | Elastic Silt; Elastic Silt with Sand or Gravel; Sandy or Gravelly Elastic Silt |
| | Silty Clay (based on Atterberg Limits) | | | CL-ML | Silty Clay; Silty Clay with Sand or Gravel; Gravelly or Sandy Silty Clay |
| | Clays | | | CL | Lean Clay; Lean Clay with Sand or Gravel; Sandy or Gravelly Lean Clay |
| | | | | CH | Fat Clay; Fat Clay with Sand or Gravel; Sandy or Gravelly Fat Clay |
| | Organics | | | OL/OH | Organic Soil; Organic Soil with Sand or Gravel; Sandy or Gravelly Organic Soil |
| Highly Organic (>50% organic material) | | | | PT | Peat - Decomposing Vegetation - Fibrous to Amorphous Texture |

## Minor Constituents

| | Estimated Percentage |
|---|---|
| **Sand, Gravel** | |
| Trace | <5 |
| Few | 5 - 15 |
| **Cobbles, Boulders** | |
| Trace | <5 |
| Few | 5 - 10 |
| Little | 15 - 25 |
| Some | 30 - 45 |

## Soil Test Symbols

| | |
|---|---|
| %F | Percent Passing No. 200 Sieve |
| AL | Atterberg Limits (%) |
| | Liquid Limit (LL) |
| | Water Content (WC) |
| | Plastic Limit (PL) |
| CA | Chemical Analysis |
| CAUC | Consolidated Anisotropic Undrained Compression |
| CAUE | Consolidated Anisotropic Undrained Extension |
| CBR | California Bearing Ratio |
| CIDC | Consolidated Drained Isotropic Triaxial Compression |
| CIUC | Consolidated Isotropic Undrained Compression |
| CK0DC | Consolidated Drained k0 Triaxial Compression |
| CK0DSS | Consolidated k0 Undrained Direct Simple Shear |
| CK0UC | Consolidated k0 Undrained Compression |
| CK0UE | Consolidated k0 Undrained Extension |
| CRSCN | Constant Rate of Strain Consolidation |
| DS | Direct Shear |
| DSS | Direct Simple Shear |
| DT | In Situ Density |
| GS | Grain Size Classification |
| HYD | Hydrometer |
| ILCN | Incremental Load Consolidation |
| K0CN | k0 Consolidation |
| kc | Constant Head Permeability |
| kf | Falling Head Permeability |
| MD | Moisture Density Relationship |
| OC | Organic Content |
| OT | Tests by Others |
| P | Pressuremeter |
| PID | Photoionization Detector Reading |
| PP | Pocket Penetrometer |
| SG | Specific Gravity |
| TRS | Torsional Ring Shear |
| TV | Torvane |
| UC | Unconfined Compression |
| UUC | Unconsolidated Undrained Triaxial Compression |
| VS | Vane Shear |
| WC | Water Content (%) |

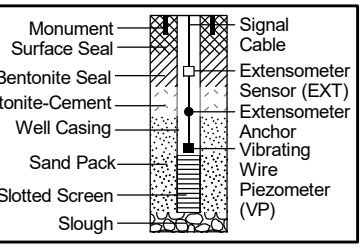
## Groundwater Indicators

- Groundwater Level on Date or At Time of Drilling (ATD)
- Groundwater Level on Date Measured in Piezometer
- Groundwater Seepage (Test Pits)

## Sample Symbols

- SPT Split Spoon
- Oversized Split Spoon (see appendix text)
- Push Probe
- Rock Core Run
- Sonic Core
- Thin-walled Sampler
- Grab
- Cuttings

## Well Symbols




| | | | |
|---|---|---|---|
| HALEY ALDRICH | Project: KOSMOS MILL OIL CLEANUP - FLATS AREA<br>Location: GLENOMA, WASHINGTON<br>Project No.: 0202832-001 | **Key to Exploration Logs** | Figure **C-1**<br>Sheet **1 of 1** |

HA KEY TO EXP LOGS (SOIL ONLY) - \\HALEYALDRICH.COM\SHARES\EA_DATA\GINT\HC_LIBRARY.GLB - 8/19/25 17:02 - \\HALEYALDRICH.COM\SHARES\EA_PROJECTS\NOTEBOOKS\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbuhl

Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,275.14 E: 1,214,576.71 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 754.40 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 754 | 0 | | | | | | | SANDY SILT (ML), (medium stiff), moist, dark brown, few organics (roots). | 0 |
| | | | 6 | | 0.0 | NS | | | |
| 750 | 5 | | | S-1 | 0.0 | NS | | SILTY SAND (SM), (medium dense), moist, gray-brown, some iron oxide staining. | 5 |
| | | | 6 | | 0.0 | NS | | grades to SILTY SAND WITH GRAVEL (SM), few cobble | |
| 745 | 10 | | | S-2 | 0.0 | NS | | Bottom of Test Pit at 10.0 feet. | 10 |
| 740 | 15 | | | | | | | | 15 |
| 735 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-16**

Figure **C-2**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,112.67 E: 1,214,488.71 (WA State Plane N, NAD 83, ft.) Total Depth: 16.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.29 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 757 | 0 | | | | | | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, brown. | 0 |
| | | | | | | | | becomes gray | |
| 755 | | | 6 | | 0.0 | SS | | LEAN CLAY (CL), (medium stiff), moist, gray. | |
| | 5 | | | S-1 | 0.0 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, gray.<br>perched water seeped into test pit | 5 |
| 750 | | | | S-2 | 0.0 | NS | | becomes light brown | |
| | 10 | | 6 | | 0.0 | NS | | | 10 |
| 745 | | | 6 | | 0.0 | NS | | | |
| | 15 | | | S-3 | 0.0 | NS | | | 15 |
| 740 | | | | | | | | Bottom of Test Pit at 16.0 feet. | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-17**

Figure **C-3**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuttel

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,041.71 E: 1,214,412.65 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 755.99 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Type | Sample Length (inches) | Sample Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description |
|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | SANDY SILT (ML), (soft), moist, brown, some organics. |
| 755 | | | | | | | | SILTY SAND WITH GRAVEL (SM), (medium dense), wet, gray, black staining, strong petroleum-like odor. |
| | | | 6 | | 0.0 | MS | | SILT (ML), (medium stiff), moist, gray. |
| | | | 6 | | 0.0 | NS | | becomes brown-gray |
| | 5 | | | S-1 | 0.0 | NS | | |
| 750 | | | | | | | | POORLY GRADED SAND WITH GRAVEL (SP), (medium dense), moist, red-brown. |
| | | | 6 | | | | | |
| | 10 | | | S-2 | 0.0 | NS | | Bottom of Test Pit at 10.0 feet. |
| 745 | | | | | | | | |
| | 15 | | | | | | | |
| 740 | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-18**

Figure **C-4**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholtef

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,007.07 E: 1,214,409.90 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 755.47 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 755 | 0 | | | | | | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, brown. | 0 |
| | | | | | | | | metal pipe at 2 ft. | |
| | | | 6 | | | | | | |
| | | | | | | | | LEAN CLAY (CL), (stiff), moist, gray. | |
| 750 | 5 | | | S-1 | 0.0 | NS | | | 5 |
| | | | | | | | | POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), (medium dense), moist, gray. | |
| | | | | | | | | becomes light brown | |
| | | | 6 | | 0.0 | NS | | | |
| | | | | | | | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, light brown. | |
| 745 | 10 | | | S-2 | 0.0 | NS | | | 10 |
| | | | | | | | | Bottom of Test Pit at 10.0 feet. | |
| 740 | 15 | | | | | | | | 15 |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-19**

Figure **C-5**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

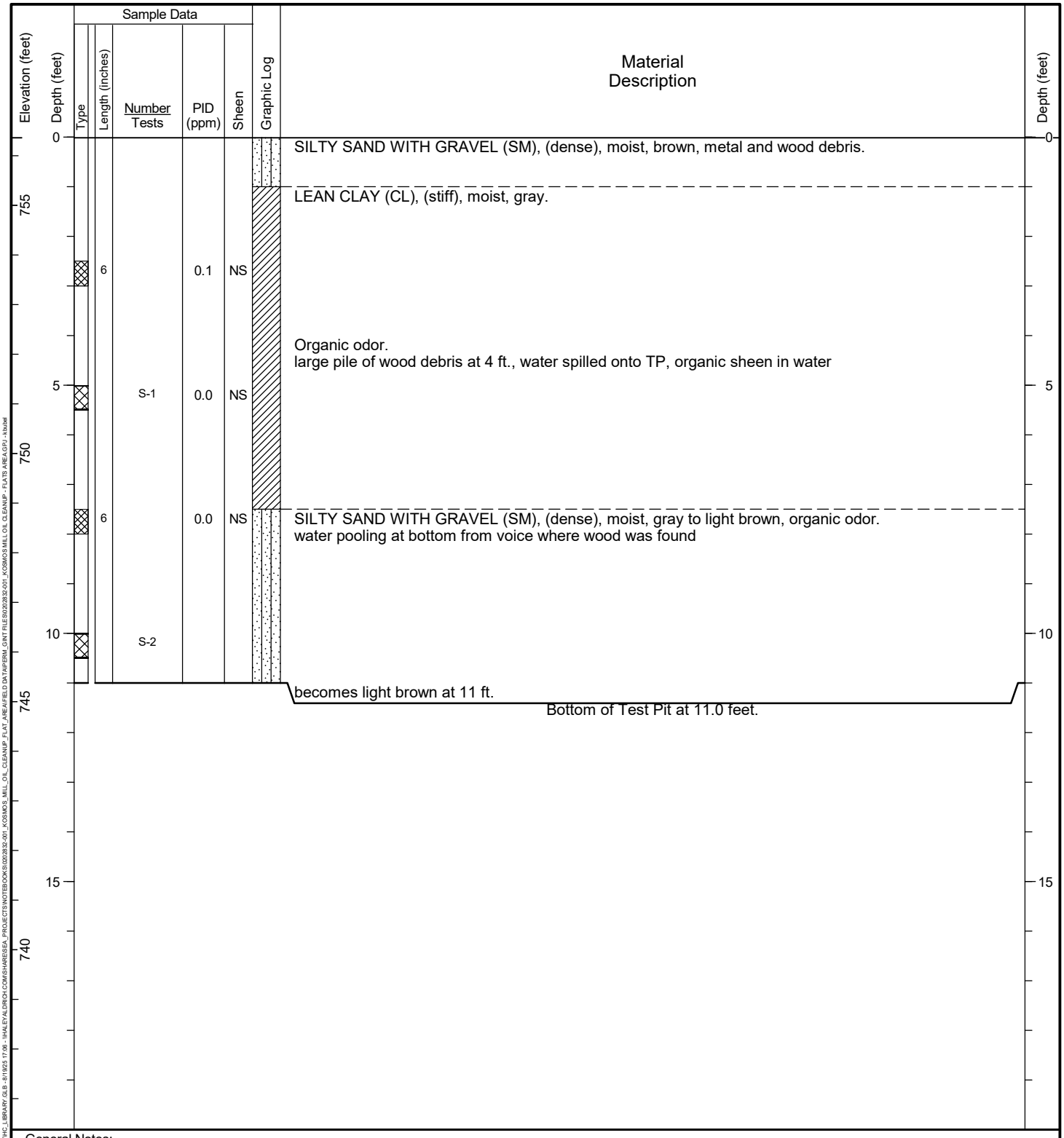
Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,003.86 E: 1,214,452.74 (WA State Plane N, NAD 83, ft.) Total Depth: 11.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 756.38 feet (Tacoma City Light (TCL) Datum)

Comments:




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

| | | | |
|---|---|---|---|
| HALEY ALDRICH | Project: KOSMOS MILL OIL CLEANUP - FLATS AREA<br>Location: GLENOMA, WASHINGTON<br>Project No.: 0202832-001 | Test Pit Log<br>**TP-20** | Figure **C-6**<br>Sheet **1 of 1** |

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,138.23 E: 1,214,595.92 (WA State Plane N, NAD 83, ft.) Total Depth: 18.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.79 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | SILTY SAND WITH GRAVEL (SM), (loose), moist, brown. | 0 |
| | | | | | | | | LEAN CLAY (CL), (medium stiff), moist, brown. | |
| 755 | | | | | | | | becomes gray | |
| | | | | | | | | SILTY SAND (SM), (medium dense), moist, gray. | |
| | 5 | | | S-1 | 1.2 | NS | | heavy petroleum-like odor | 5 |
| 750 | | | 6 | | 770.0 | HS | | becomes brown, moderate petroleum-like odor | |
| | 10 | | | S-2 | 18.2 | HS | | grades to with gravel, gray, heavy petroleum-like odor | 10 |
| 745 | | | 6 | | 97.0 | HS | | | |
| | 15 | | | S-3 | 9.4 | SS | | slight petroleum-like odor | 15 |
| 740 | | | | | | | | Bottom of Test Pit at 18.0 feet. | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-21**

Figure **C-7**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: M. Bradshaw Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,101.74 E: 1,214,669.73 (WA State Plane N, NAD 83, ft.) Total Depth: 15.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.53 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 757.5 | 0 | | | | | | | CLAYEY SAND (SC), (medium dense), moist, black, strong petroleum-like odor. | 0 |
| | | | | S-1 | 0.0 | NS | | | |
| 755 | 5 | | | S-2 | 0.0 | NS | | becomes gray, no odor | 5 |
| 750 | | | | | | | | POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM), moist, red-brown. | |
| | 10 | | | S-3 | 0.0 | NS | | | 10 |
| 745 | | | | | | | | | |
| | 15 | | | | | | | Bottom of Test Pit at 15.0 feet. | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-22**

Figure **C-8**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,013.70 E: 1,214,548.54 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 758.07 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | 6 | | 0.0 | NS | | SANDY SILT (ML), (medium stiff), moist, brown. | 0 |
| 755 | | | | S-1 | 0.0 | NS | | SANDY SILT (ML), (medium stiff), moist, brown, some iron oxide staining. | |
| | 5 | | | | | | | perched water flowing in at 4 ft. | 5 |
| 750 | | | 6 | | 0.0 | NS | | | |
| | 10 | | | S-2 | 0.0 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, brown. water pooling at bottom of test pit | 10 |
| | | | | | | | | Bottom of Test Pit at 10.0 feet. | |
| 745 | 15 | | | | | | | | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-23**

Figure **C-9**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholtef

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: M. Bradshaw Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,095.37 E: 1,214,715.21 (WA State Plane N, NAD 83, ft.) Total Depth: 15.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.74 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | SILTY SAND WITH GRAVEL (SM), (medium dense), wet, gray-black, moderate petroleum-like odor. | 0 |
| 755 | | | | S-1<br>S-100 | 10.1 | MS | | CLAYEY SAND WITH GRAVEL (SC), (medium dense), wet, gray-black, moderate petroleum-like odor. | |
| | 5 | | 6 | | 3.0 | SS | | POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), (medium dense), moist, brown, no odor. | 5 |
| 750 | | | | | | | | | |
| | 10 | | | S-2 | 0.0 | NS | | POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM), (medium dense), moist, brown, no odor. | 10 |
| 745 | | | | | | | | | |
| | 15 | | 6 | | 0.0 | NS | | Bottom of Test Pit at 15.0 feet. | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-24**

Figure **C-10**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOKS\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khobel

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: M. Bradshaw Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,041.25 E: 1,214,690.16 (WA State Plane N, NAD 83, ft.) Total Depth: 15.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 758.05 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | SANDY SILT (ML), (medium stiff), moist, gray-black, slight odor. | 0 |
| 755 | | | 6 | | NS | | SILTY SAND WITH GRAVEL (SM), (loose), moist, gray, no odor. | |
| | 5 | | | S-1 | NS | | becomes brown-red, few cobble | 5 |
| 750 | | | | | | | | |
| | 10 | | 6 | | NS | | | 10 |
| 745 | | | | | | | | |
| | 15 | | | S-2 | NS | | Bottom of Test Pit at 15.0 feet. | 15 |
| 740 | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-25**

Figure **C-11**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholtef

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: M. Bradshaw Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,038.84 E: 1,214,648.02 (WA State Plane N, NAD 83, ft.) Total Depth: 15.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.98 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | CLAYEY SAND WITH GRAVEL (SC), (medium dense), wet, gray-black, slight odor. | 0 |
| 755 | | | 6 | | 0.0 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, gray, no odor. | |
| | 5 | | | S-1 | 0.0 | NS | | POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM), (loose), moist, red-brown, no odor. | 5 |
| 750 | | | | | | | | | |
| | 10 | | 6 | | 0.0 | NS | | SILTY SAND WITH GRAVEL (SM), some cobble, (loose), moist, gray. | 10 |
| 745 | | | | S-2 | 0.0 | NS | | | |
| | 15 | | | | | | | Bottom of Test Pit at 15.0 feet. | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-26**

Figure **C-12**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,019.43 E: 1,214,729.17 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 758.07 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | ORGANIC SOIL WITH SAND (OL/OH), some subround cobble, few subround gravel, (stiff), moist, brown, roots and organic fines. | 0 |
| | | | | | | | | SILTY SAND WITH GRAVEL (SM), little subround cobble, (dense), moist, brown, trace organics (roots). | |
| 755 | | | 6 | | 0.0 | NS | | FAT CLAY (CH), (stiff), moist, dark gray, frequent iron oxide staining. | |
| | 5 | | | S-1 | 0.0 | NS | | rapid groundwater seepage from 6 ft. | 5 |
| | | | | | | | | POORLY GRADED SAND WITH SILT (SP-SM), (loose), moist, gray-brown to red-brown. | |
| 750 | | | 6 | | 0.0 | NS | | becomes gray to red-brown | |
| | 10 | | | S-2 | 0.0 | NS | | grades to POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), dense, wet, frequent iron oxide staining | 10 |
| | | | | | | | | Bottom of Test Pit at 10.0 feet. | |
| 745 | 15 | | | | | | | | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-27**

Figure **C-13**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 426,791.20 E: 1,214,619.28 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 754.41 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | SILT (ML), (soft), moist, brown, no odor, some organics (roots). | 0 |
| | | | 6 | | 0.0 | NS | | | |
| 750 | | | | | | | | grades to SANDY SILT (ML), medium stiff, gray, some iron oxide staining | |
| | 5 | | | S-1 | 0.0 | NS | | | 5 |
| | | | 6 | | 0.0 | NS | | POORLY GRADED SAND WITH GRAVEL (SP), (medium dense), moist, gray. | |
| 745 | | | | S-2 | 0.0 | NS | | | |
| | 10 | | | | | | | Bottom of Test Pit at 10.0 feet. | 10 |
| 740 | 15 | | | | | | | | 15 |
| 735 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-28**

Figure **C-14**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY_GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuttel

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,017.06 E: 1,214,779.16 (WA State Plane N, NAD 83, ft.) Total Depth: 11.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.92 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | ORGANIC SOIL WITH SAND (OL/OH), few subround cobble, (soft), moist, brown to dark gray, organic fines and roots, trace wood debris. | 0 |
| | | | | | | | | FAT CLAY (CH), (stiff), moist, gray to red-brown, frequent iron oxide staining. | |
| 755 | | | 6 | | 0.0 | NS | | | |
| | 5 | | | S-1 | 1.2 | NS | | slight petroleum-like odor, groundwater seepage<br>odor increases with depth from 5 to 8 ft. | 5 |
| | | | | | | | | POORLY GRADED SAND (SP), (dense), moist, gray, uniform fine to medium sand. | |
| | | | 6 | | 14.8 | NS | | | |
| 750 | | | | | | | | SANDY SILT (ML), trace gravel, (soft), moist, gray to gray-brown to red-brown, frequent iron oxide staining. | |
| | 10 | | | S-2 | 0.0 | NS | | | 10 |
| | | | | | | | | Bottom of Test Pit at 11.0 feet. | |
| 745 | | | | | | | | | |
| | 15 | | | | | | | | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-29**

Figure **C-15**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 426,765.85 E: 1,214,711.29 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 754.42 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 750 | 0 | | | | | | | SILT (ML), (soft), moist, brown, no odor, some organics (wood, roots). | 0 |
| | | | 6 | | 0.0 | NS | | | |
| | 5 | | | S-1 | 0.0 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, gray, no odor. | 5 |
| 745 | | | 6 | | 0.0 | NS | | becomes brown | |
| | 10 | | | S-2 | 0.0 | NS | | Bottom of Test Pit at 10.0 feet. | 10 |
| 740 | 15 | | | | | | | | 15 |
| 735 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-30**

Figure **C-16**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,199.19 E: 1,214,882.32 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.86 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | ORGANIC SOIL WITH SAND (OL/OH), few subround cobble, (stiff), moist, brown to red-brown, organics (fines and roots). | 0 |
| | | | | | | | | SILTY SAND WITH GRAVEL (SM), few subround cobble, (dense), moist, red-brown to gray-brown, frequent iron oxide staining, scattered metal debris, trace organics (roots). | |
| 755 | | | | S-1 | 0.1 | NS | | FAT CLAY (CH), trace gravel, (stiff), moist, dark gray, organics (roots). | |
| | 5 | | | S-2 | 0.0 | NS | | | 5 |
| 750 | | | | | | | | SANDY SILT (ML), trace gravel, (soft), moist, gray. | |
| | | | | | | | | SILTY SAND WITH GRAVEL (SM), few subround cobble, (dense), moist, red-brown. | |
| | 10 | | | | | | | Bottom of Test Pit at 10.0 feet. | 10 |
| 745 | | | | | | | | | |
| | 15 | | | | | | | | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-31**

Figure **C-17**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,165.98 E: 1,214,857.18 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.84 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | ORGANIC SOIL WITH SAND (OL/OH), trace gravel, few subround cobble, trace boulders, (stiff), moist, brown, occasional iron oxide staining pockets, organic (fines and roots). | 0 |
| | | | | | | | | SILTY SAND WITH GRAVEL (SM), (dense), moist, red-brown to brown, few subround gravel. | |
| | | | | | | | | SANDY FAT CLAY (CH), (stiff), moist, red-brown to dark gray, frequent iron oxide staining. | |
| 755 | | | | S-1 | 0.0 | NS | | | |
| | | | | | | | | becomes gray | |
| | 5 | | | S-2 | 0.0 | NS | | | 5 |
| | | | | | | | | groundwater seepage at 5.5 ft. | |
| | | | | | | | | increasing medium sand at 7 ft., few subround cobble from 7 to 7.5 ft. with frequent iron oxide staining | |
| 750 | | | | | | | | CLAYEY SAND WITH GRAVEL (SC), (dense), moist, gray to red-brown, few subround gravel, frequent iron-oxide staining. | |
| | 10 | | | | | | | Bottom of Test Pit at 10.0 feet. | 10 |
| 745 | | | | | | | | | |
| | 15 | | | | | | | | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-32**

Figure **C-18**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuttel

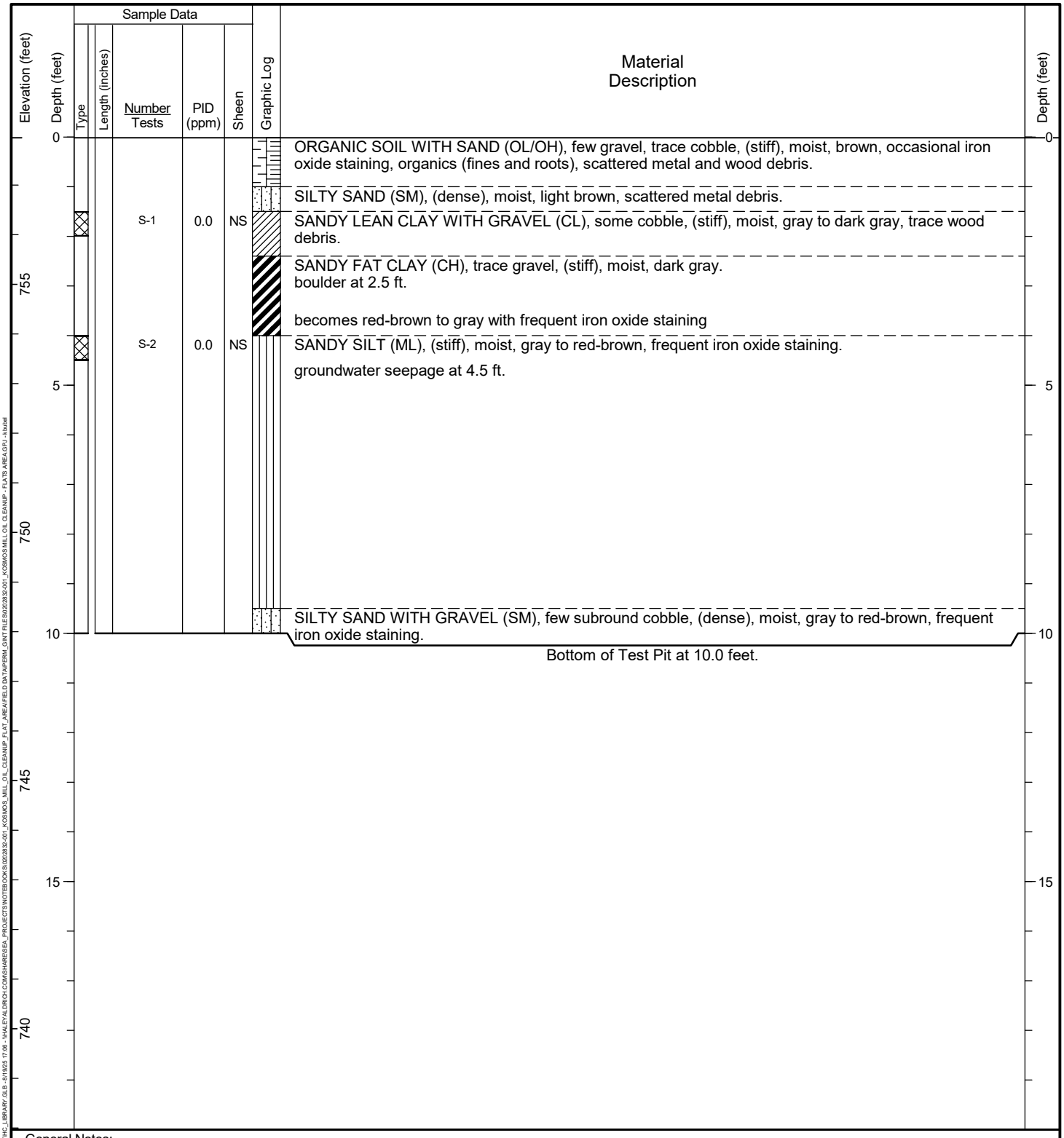
Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,152.98 E: 1,214,905.80 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.97 feet (Tacoma City Light (TCL) Datum)

Comments:




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-33**

Figure **C-19**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,098.13 E: 1,214,858.49 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.99 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Type | Sample Length (inches) | Sample Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description |
|---|---|---|---|---|---|---|---|---|
| 757.99 | 0 | | | | | | | ORGANIC SOIL WITH SAND (OL/OH), (stiff), moist, brown. |
| | | | | | | | | SILTY SAND WITH GRAVEL (SM), few cobble, (dense), moist, dark brown, scattered organics (roots, wood), scattered metal debris. |
| | | | | | | | | SANDY FAT CLAY (CH), (stiff), moist, dark brown, frequent iron oxide staining, petroleum-like odor, scattered organics (roots, wood), metal debris. |
| 755 | | | | S-1 | 34.8 | | | |
| | | | | | | | | 12-inch diameter metal pipe encountered at 3 ft., water in pipe had a petroleum-like odor and sheen |
| | 5 | | | S-2 | 0.0 | NS | | |
| 750 | | | | | | | | SILTY SAND WITH GRAVEL (SM), few subround to subangular cobble, (dense), moist, red-brown, no odor. |
| | | | | S-3 | 0.0 | NS | | |
| | 10 | | | | | | | Bottom of Test Pit at 10.0 feet. |
| 745 | | | | | | | | |
| | 15 | | | | | | | |
| 740 | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-34**

Figure **C-20**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuhn

Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,031.73 E: 1,214,930.23 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.79 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | ORGANIC SOIL WITH SAND (OL/OH), (stiff), moist, brown, roots and organic fines. | 0 |
| | | | | | | | | SILTY SAND (SM), (dense), gray-brown, scattered organics (roots). | |
| | | | | | | | | becomes red-brown, few cobble | |
| 755 | | | | | | | | SANDY FAT CLAY (CH), (stiff), moist, dark gray to gray, frequent iron oxide staining, scattered organics (roots, wood) and metal debris. | |
| | | | | S-1 | 0.0 | NS | | | |
| | 5 | | | | | | | groundwater seepage at 5.0 ft. | 5 |
| 750 | | | | | | | | | |
| | | | | S-2 | 0.0 | NS | | CLAYEY SAND (SC), (dense), moist, gray to red-brown, frequent iron oxide staining. groundwater seepage from 8.5 to 9.5 ft. | |
| | 10 | | | | | | | Bottom of Test Pit at 10.0 feet. | 10 |
| 745 | | | | | | | | | |
| | 15 | | | | | | | | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-35**

Figure **C-21**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOKS\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholef

Date Started: 05/02/2022 Date Completed: 05/02/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,117.62 E: 1,214,992.24 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 758.02 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | top soil, roots and organics | 0 |
| | | | | | | | | SILTY GRAVEL WITH SAND (GM), (dense), moist, brown. | |
| 755 | | | | | | | | SANDY SILT (ML), trace gravel, (stiff), moist, gray to dark gray. | |
| | | | | | | | | encountered metal pipe at 3 ft., water in pipe had a petroleum-like odor and sheet timber and concrete at 3.5 ft. along south wall | |
| | | | | S-1 | 24.6 | MS | | | |
| | 5 | | | | | | | | 5 |
| 750 | | | | | | | | SILTY GRAVEL WITH SAND (GM), some cobble, (dense), moist, red-brown, frequent iron oxide staining. | |
| | | | | S-2 | 0.0 | NS | | | |
| | 10 | | | | | | | Bottom of Test Pit at 10.0 feet. | 10 |
| 745 | | | | | | | | | |
| | 15 | | | | | | | | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-36**

Figure **C-22**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholtef

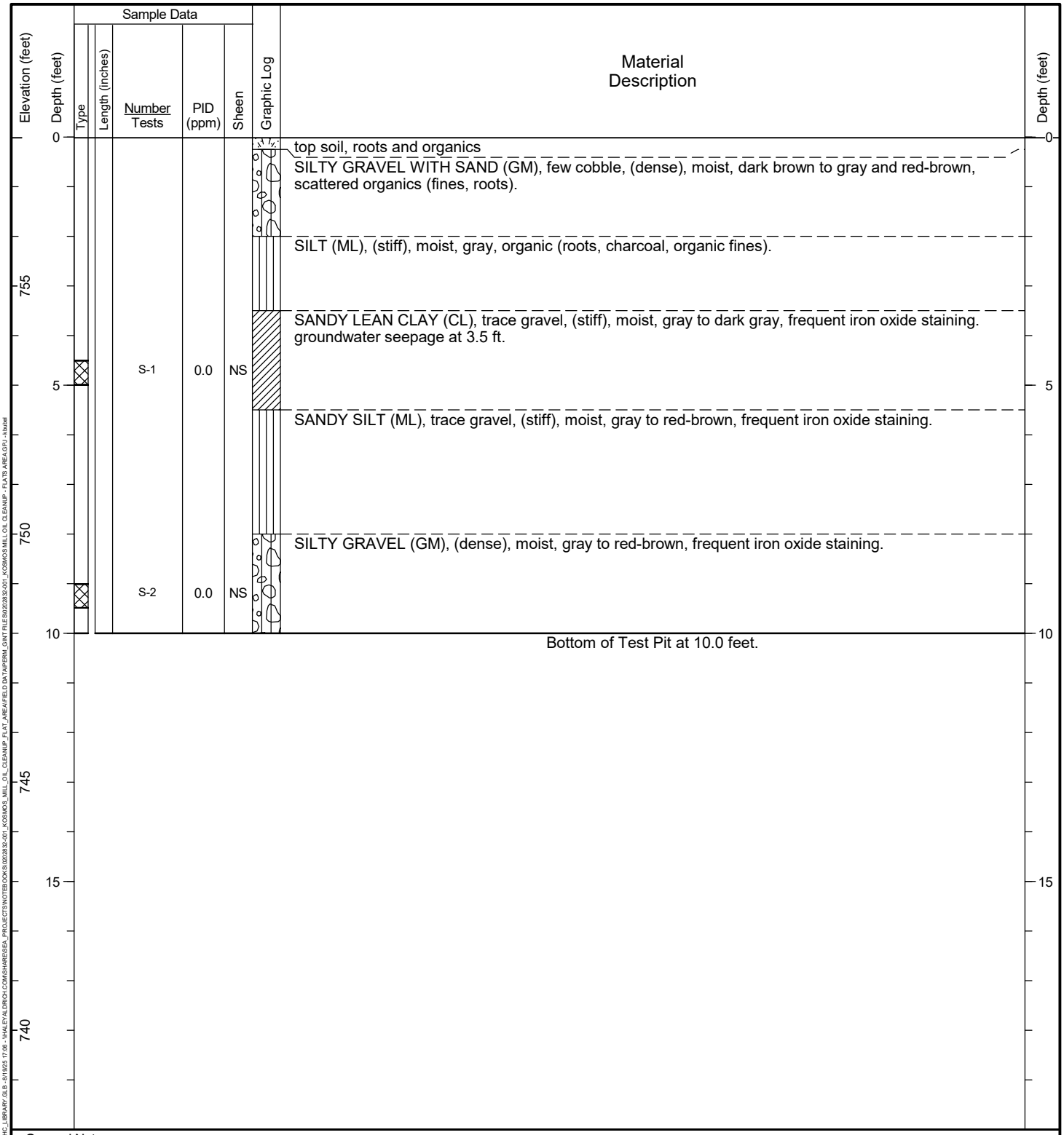
Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,092.22 E: 1,214,991.13 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 758.00 feet (Tacoma City Light (TCL) Datum)

Comments:




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-36B**

Figure **C-23**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholtef

Date Started: 05/02/2022 Date Completed: 05/02/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,300.42 E: 1,215,164.29 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.56 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description |
|---|---|---|---|---|---|---|---|---|
| 757.56 | 0 | | | | | | | top soil, roots and organics |
| | | | | | | | | SANDY SILT (ML), (soft), moist, brown to dark brown, iron oxide staining, scattered organic fines. |
| | | | | | | | | grades to trace gravel, stiff, gray-brown, frequent iron oxide staining |
| 755 | | | | S-1 | 0.0 | NS | | |
| | 5 | | | | | | | groundwater seepage at 4.5 ft. |
| | | | | S-2 | 0.0 | | | |
| 750 | | | | | | | | SILTY GRAVEL (GM), few cobble, (dense), moist, red-brown. |
| | 10 | | | | | | | Bottom of Test Pit at 10.0 feet. |
| 745 | | | | | | | | |
| | 15 | | | | | | | |
| 740 | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-37**

Figure **C-24**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholef

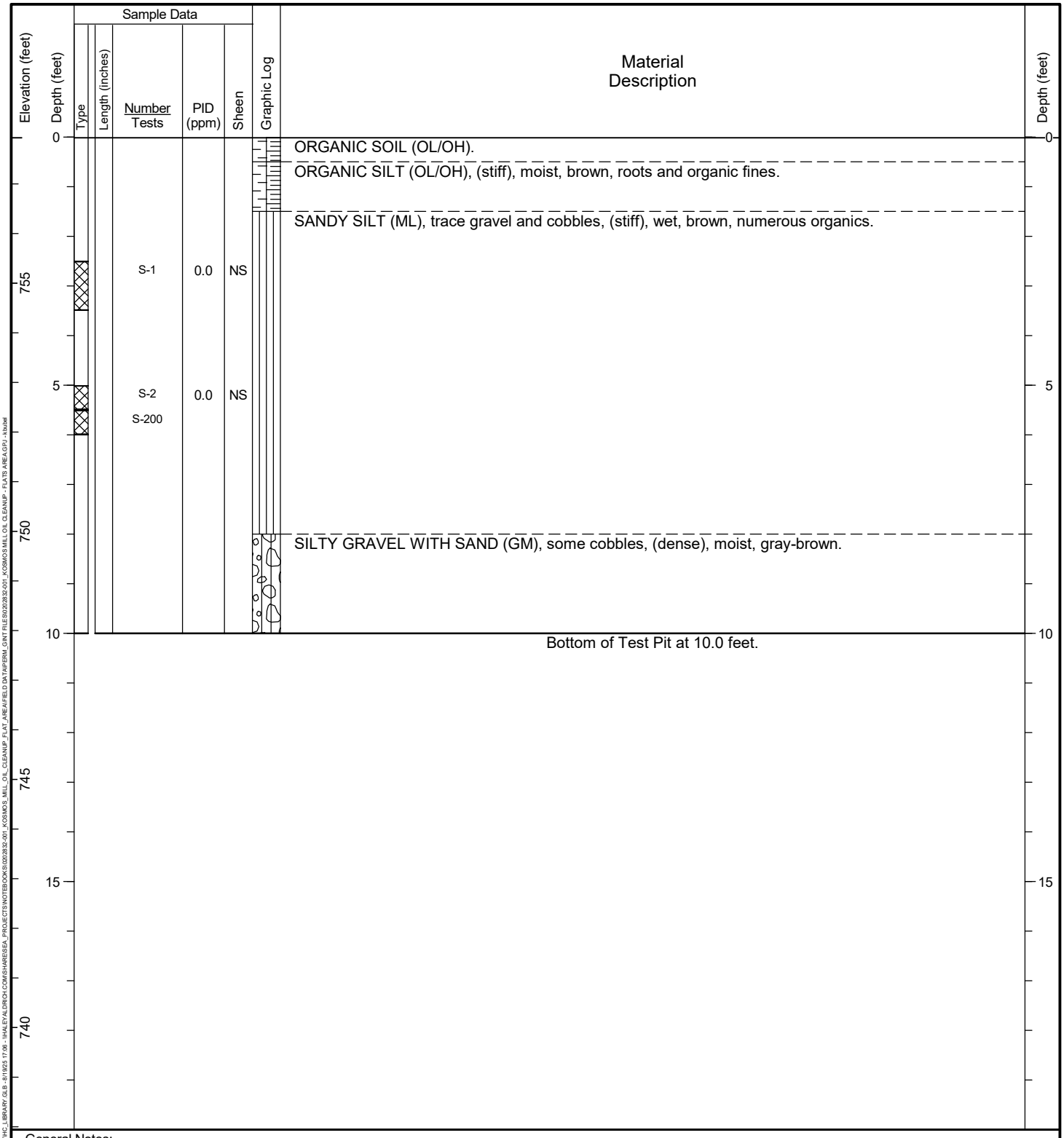
Date Started: 05/02/2022 Date Completed: 05/02/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,213.00 E: 1,215,109.19 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.94 feet (Tacoma City Light (TCL) Datum)

Comments:




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-38**

Figure **C-25**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINT\HC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholtef

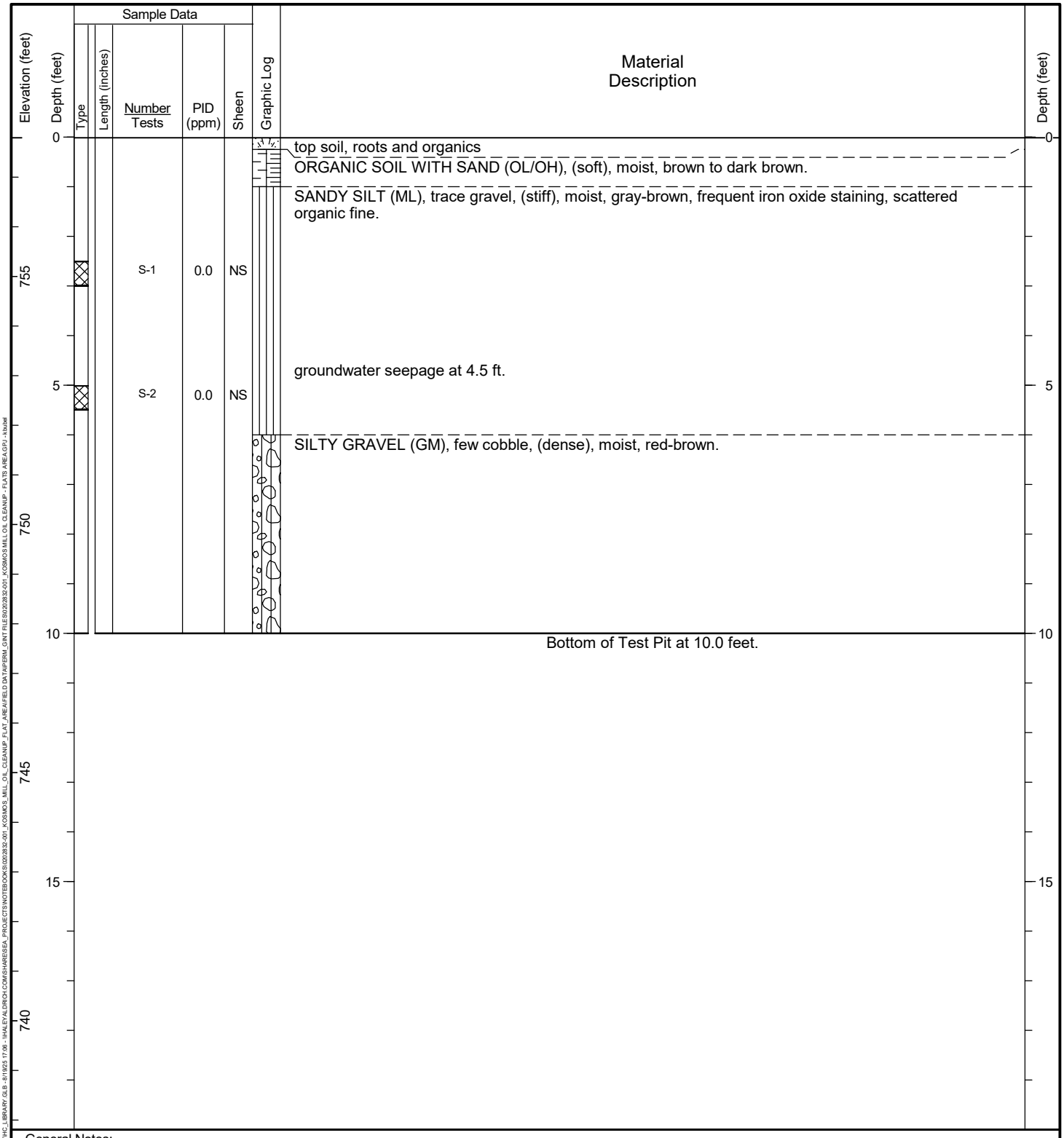
Date Started: 05/02/2022 Date Completed: 05/02/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,201.08 E: 1,215,207.43 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.81 feet (Tacoma City Light (TCL) Datum)

Comments:




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-39**

Figure **C-26**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/02/2022 Date Completed: 05/02/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,253.62 E: 1,214,438.74 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 736.99 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | SILTY SAND WITH GRAVEL (SM), few cobble, (dense), moist, brown. | 0 |
| 735 | | | | | | | | | |
| | | | 6 | | 0.0 | NS | | metal debris | |
| | 5 | | | S-1 | 0.0 | NS | | | 5 |
| 730 | | | 6 | | 0.0 | NS | | | |
| | 10 | | | S-2 | 0.0 | NS | | Bottom of Test Pit at 10.0 feet. | 10 |
| 725 | | | | | | | | | |
| | 15 | | | | | | | | 15 |
| 720 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-40**

Figure **C-27**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuhn

Date Started: 05/02/2022 Date Completed: 05/02/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,246.77 E: 1,214,467.45 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 745.03 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | GRAVELLY ELASTIC SILT WITH SAND (ML), (soft), moist, brown, some wood and metal debris. | 0 |
| | | | 6 | | 0.0 | NS | | SILTY SAND WITH GRAVEL (SM), cobble, (dense), moist, brown. | |
| 740 | 5 | | | S-1 | 0.0 | NS | | | 5 |
| | | | 6 | | 0.0 | NS | | SILTY GRAVEL WITH SAND (GM), cobble, (dense), moist, brown. | |
| 735 | 10 | | | S-2 | 0.0 | NS | | Bottom of Test Pit at 10.0 feet. | 10 |
| 730 | 15 | | | | | | | | 15 |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-41**

Figure **C-28**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholef

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,217.60 E: 1,214,456.95 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 741.58 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description |
|---|---|---|---|---|---|---|---|---|
| 740 | 0 | | | | | | | ORGANIC SOIL WITH SAND (OL/OH), few gravel, trace cobble, (soft), moist, brown, organic fines, roots. |
| | | | | | | | | SILTY SAND WITH GRAVEL (SM), little subround cobble, (dense), moist, brown to yellow-brown, occasional roots, wood, scattered metal debris. 1.0 to 1.5 ft thick seam of viscous oil soil and solids (solidified petroleum product) present in north wall from 2.5 to 4 ft. |
| | | | | S-1 | 1.9 | NS | | GRAVELLY FAT CLAY WITH SAND (CH), few cobble, (stiff), moist, dark gray to black, black staining, strong petroleum-like odor, scattered wood debris, viscous oil-like liquid present. |
| | | | | S-2 | 1.0 | NS | | |
| 735 | 5 | | | | | | | SILTY SAND WITH GRAVEL (SM), few subround cobble, (dense), moist, gray-brown to red-brown to yellow-brown. |
| | | | | S-3 | 0.0 | NS | | |
| 730 | 10 | | | | | | | Bottom of Test Pit at 10.0 feet. |
| 725 | 15 | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-42 (PH-3)**

Figure **C-29**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB - 8/19/25, 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,244.92 E: 1,214,518.95 (WA State Plane N, NAD 83, ft.) Total Depth: 14.0 feet Depth to Seepage: 13 feet

Ground Surface Elevation: 750.35 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 750 | 0 | | | | | | | SILTY SAND WITH GRAVEL (SM), (loose), moist, brown, metal and wood debris. | | 0 |
| | | | 6 | | 0.0 | NS | | encountered 2-inch pipe at 2 ft. | | |
| | | | 6 | | | | | encountered corrugated pipe at 3 ft. | | |
| 745 | 5 | | | S-1 | 0.0 | NS | | | | 5 |
| | | | | S-2 | 0.0 | NS | | LEAN CLAY (CL), (soft), moist, gray, slight petroleum-like odor. | | |
| | | | | S-2b | 0.0 | NS | | S4 collected from the southwest sidewall, S4b collected from the northeast sidewall of the test pit | | |
| 740 | 10 | | | S-3 | 0.0 | SS | | SILTY SAND WITH GRAVEL (SM), (loose), wet, gray to brown, moderate petroleum-like odor. | ▽ 5/3/2022 | 10 |
| | | | | S-3-100 | 0.0 | MS | | | | |
| | | | | S-4 | 16.0 | | | | | |
| | | | | | | | | Bottom of Test Pit at 14.0 feet. | | |
| 735 | 15 | | | | | | | | | 15 |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-43 (PH-4)**

Figure **C-30**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuttel

Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,207.10 E: 1,214,501.15 (WA State Plane N, NAD 83, ft.) Total Depth: 15.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 749.93 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | SANDY SILT (ML), (soft), moist, brown. | 0 |
| | | | | | | | | LEAN CLAY (CL), (soft), moist, gray, moderate petroleum-like odor. | |
| | | | 6 | | 45.4 | MS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, gray. | |
| 745 | 5 | | | S-1 | 54.5 | MS | | LEAN CLAY (CL), (soft), moist, gray. | 5 |
| | | | 6 | | 40.4 | MS | | SILTY SAND WITH GRAVEL (SM), cobble, (dense), moist, gray, moderate petroleum-like odor. | |
| 740 | 10 | | | S-2 | 70.4 | MS | | becomes very dense, brown, no odor | 10 |
| | | | 6 | | 7.4 | NS | | | |
| 735 | 15 | | | S-3 | 1.6 | NS | | Bottom of Test Pit at 15.0 feet. | 15 |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-44 (PH-5)**

Figure **C-31**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINT\HC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

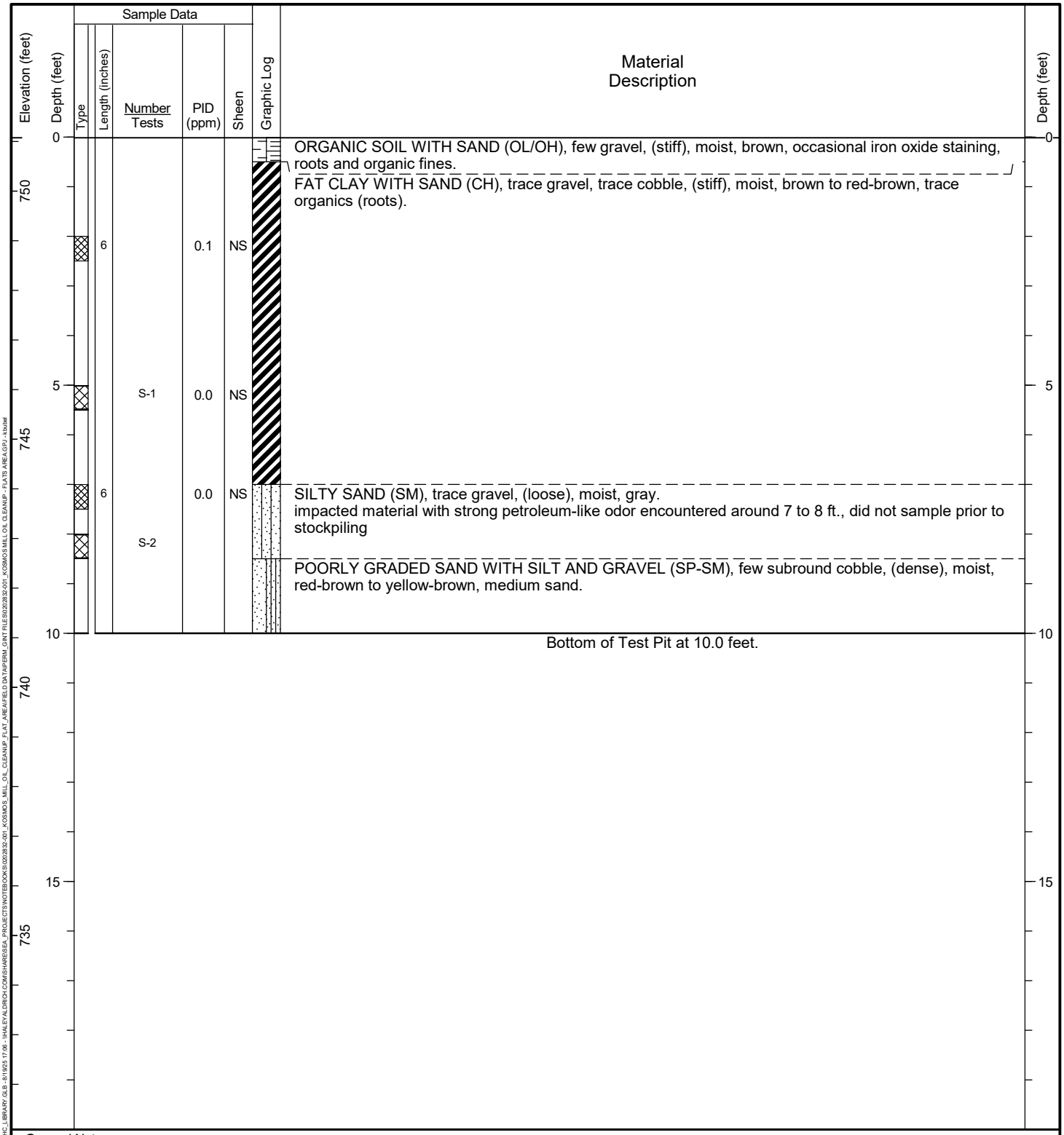
Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,185.23 E: 1,214,481.55 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 751.09 feet (Tacoma City Light (TCL) Datum)

Comments:




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-45 (PH-6)**

Figure **C-32**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuttel

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,243.07 E: 1,214,569.08 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 753.48 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 750 | 0 | | | | | | | SANDY SILT (ML), (medium stiff), moist, gray to brown. | 0 |
| | 5 | | | S-1 | 0.0 | NS | | SILTY SAND WITH GRAVEL (SM), few cobble, (dense to very dense), moist, brown. | 5 |
| 745 | | | 6 | | 0.0 | NS | | | |
| | 10 | | | S-2 | 0.0 | NS | | Bottom of Test Pit at 10.0 feet. | 10 |
| 740 | 15 | | | | | | | | 15 |
| 735 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-46 (PH-7)**

Figure **C-33**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholtef

Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,226.67 E: 1,214,545.83 (WA State Plane N, NAD 83, ft.) Total Depth: 15.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 751.77 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 751.77 | 0 | | | | | | | SILTY SAND WITH GRAVEL (SM), (loose), moist, brown to gray, some organics (roots) and wood debris. pipe and metals debris encountered at 1 ft. | 0 |
| | | | 6 | | 0.0 | SS | | SANDY LEAN CLAY (CL), (medium stiff), moist, gray, some organics (roots). | |
| 750 | 5 | | | S-1 | 0.0 | SS | | | 5 |
| | | | 6 | | 0.0 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, brown. | |
| 745 | 10 | | | S-2 | 0.0 | NS | | | 10 |
| | | | 6 | | 0.0 | NS | | | |
| 740 | 15 | | | S-3 | 0.0 | NS | | Bottom of Test Pit at 15.0 feet. | 15 |
| 735 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-47 (PH-8)**

Figure **C-34**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,198.42 E: 1,214,531.23 (WA State Plane N, NAD 83, ft.) Total Depth: 15.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 755.00 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 755 | 0 | | | | | | | SANDY SILT (ML), (medium stiff), moist, brown to gray-brown, some organics (roots). | 0 |
| | | | 6 | | 0.0 | NS | | | |
| | | | | | | | | pipe debris found at 4 ft., gray, moderate petroleum-like odor | |
| 750 | 5 | | | S-1 | >100 | SS | | SILTY SAND (SM), (loose), moist, gray, moderate petroleum-like odor. | 5 |
| | | | | S-1b | 0.0 | NS | | S1 collected from the southeast edge, S1b collected from the northwest edge of the boring | |
| | | | 6 | | 44.4 | MS | | grades to SILTY SAND WITH GRAVEL (SM), with cobble, medium dense to dense, gray-brown to brown | |
| 745 | 10 | | | S-2 | 34.9 | HS | | | 10 |
| | | | | S-2b | 0.0 | NS | | | |
| | | | 6 | | 0.0 | NS | | | |
| 740 | 15 | | 6 | | 0.0 | NS | | | 15 |
| | | | | | | | | Bottom of Test Pit at 15.0 feet. | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-48 (PH-9)**

Figure **C-35**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/03/2022 Date Completed: 05/03/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,181.09 E: 1,214,566.77 (WA State Plane N, NAD 83, ft.) Total Depth: 18.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.36 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description |
|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | ORGANIC SOIL WITH SAND (OL/OH), few subround cobble, (stiff), moist, brown, occasional iron oxide staining, scattered woody debris and roots. |
| | | | | | | | | FAT CLAY WITH SAND (CH), few subround cobble, trace boulder, (stiff), moist, gray, scattered wood and metal debris. |
| 755 | | | | S-1 | 112.6 | NS | | |
| | 5 | | | S-2 | 97.3 | SS | | |
| 750 | | | | S-3 | 844 | NS | | |
| | | | | S-4 | 1044 | NS | | CLAYEY SAND WITH GRAVEL (SC), few subround cobble, (dense), moist, gray to red-brown. |
| | 10 | | | | | | | strong petroleum-like odor at 10 ft. |
| 745 | | | | | | | | |
| | 15 | | 6 | | 24.9 | NS | | |
| 740 | | | | S-5 | 69.8 | | | |
| | | | | | | | | Bottom of Test Pit at 18.0 feet. |

Depth (feet) duplicated: 0, 5, 10, 15

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-49 (PH-10)**

Figure **C-36**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuttel

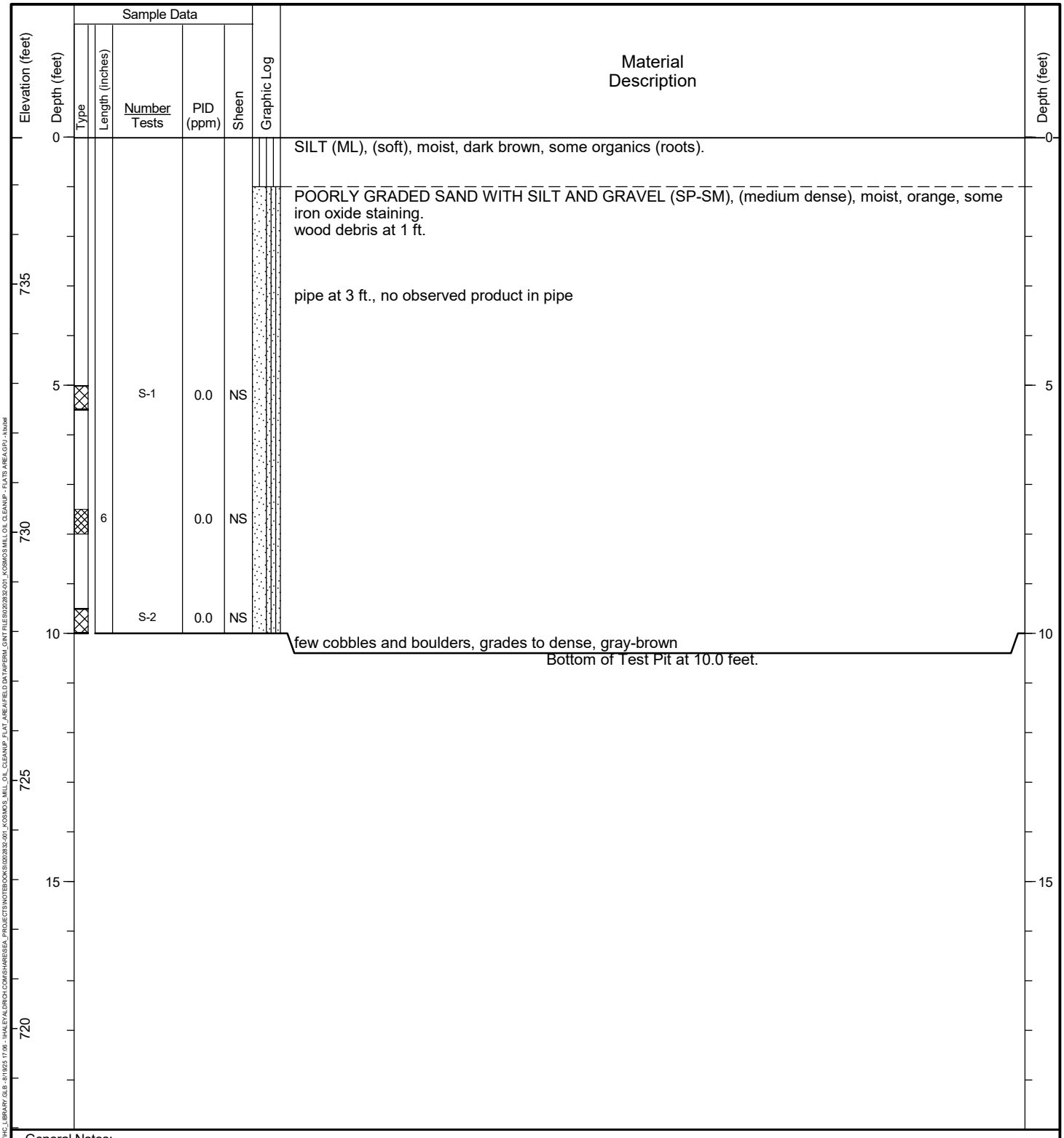
Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,110.46 E: 1,214,290.69 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 737.96 feet (Tacoma City Light (TCL) Datum)

Comments:




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-50 (PH-11)**

Figure **C-37**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\S\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,050.88 E: 1,214,290.97 (WA State Plane N, NAD 83, ft.) Total Depth: 15.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 752.40 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 752 | 0 | | | | | | | SANDY SILT (ML), (medium stiff), moist, light brown. | 0 |
| | | | | S-1 | 35.7 | SS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, gray, moderate petroleum-like odor. | |
| 750 | | | | S-100 | 2.7 | SS | | | |
| | 5 | | | | | | | water seeping into test pit at 7 ft. | 5 |
| 745 | | | | S-2 | 2.6 | NS | | POORLY GRADED SAND WITH GRAVEL (SP), (medium dense), moist, brown, slight petroleum-like odor. | |
| | 10 | | | | | | | | 10 |
| 740 | | | 6 | | 0.5 | NS | | POORLY GRADED SAND WITH GRAVEL (SP-SM), (dense), moist, brown. | |
| | | | | S-3 | 0.0 | NS | | | |
| | 15 | | | | | | | Bottom of Test Pit at 15.0 feet. | 15 |
| 735 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-51 (PH-12)**

Figure **C-38**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

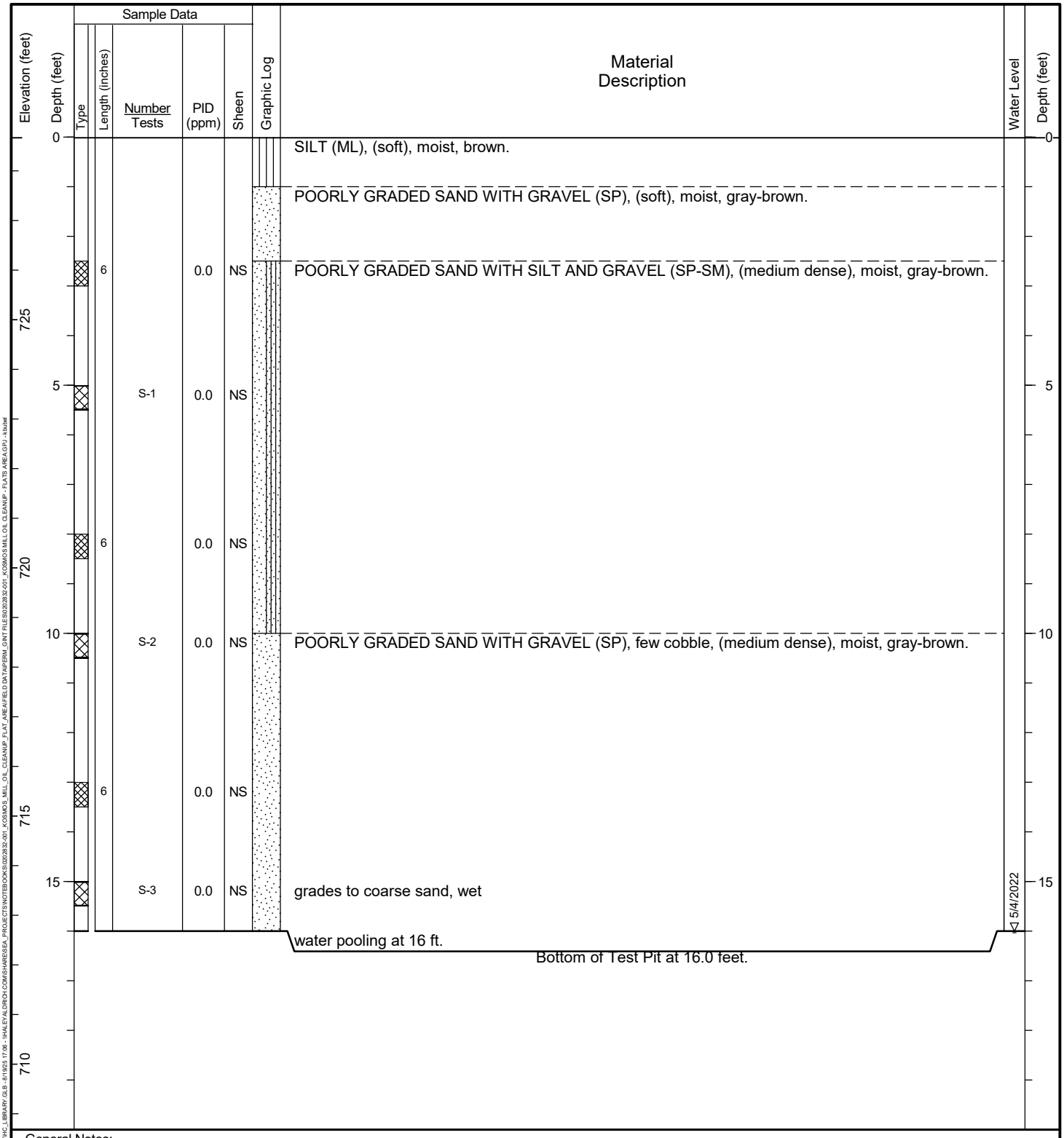
Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,131.94 E: 1,214,284.84 (WA State Plane N, NAD 83, ft.) Total Depth: 16.0 feet Depth to Seepage: 16 feet

Ground Surface Elevation: 728.68 feet (Tacoma City Light (TCL) Datum)

Comments:




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-52 (PH-13)**

Figure **C-39**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholst

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,116.33 E: 1,214,268.72 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 732.55 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | SILT (ML), (soft), moist, dark brown, few organics (roots). | 0 |
| 730 | | | | | | | | SILTY SAND WITH GRAVEL (SM), few cobble, (medium dense), moist, gray-brown. | |
| | | | 6 | | 0.0 | NS | | POORLY GRADED SAND WITH GRAVEL (SP), few cobble, (dense), moist, gray-brown. | |
| | 5 | | | S-1 | 0.0 | NS | | | 5 |
| 725 | | | 6 | | 0.0 | NS | | | |
| | | | | S-2 | 0.0 | NS | | | |
| | 10 | | | | | | | Bottom of Test Pit at 10.0 feet. | 10 |
| 720 | | | | | | | | | |
| | 15 | | | | | | | | 15 |
| 715 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-53 (PH-14)**

Figure **C-40**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY_GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuttel

Date Started: 05/02/2022 Date Completed: 05/02/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,288.13 E: 1,214,466.54 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 742.67 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 742 | 0 | | | | | | | SILTY SAND WITH GRAVEL (SM), moist, brown, some iron oxide staining, no odor. | 0 |
| 740 | | | 6 | | 0.0 | NS | | | |
| | 5 | | | S-1 | 0.0 | NS | | | 5 |
| 735 | | | | S-2 | 0.1 | NS | | | |
| | 10 | | | | | | | Bottom of Test Pit at 10.0 feet. | 10 |
| 730 | | | | | | | | | |
| | 15 | | | | | | | | 15 |
| 725 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-54 (PH-15)**

Figure **C-41**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khotel

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type:

Location: N: 427,183.80 E: 1,214,613.26 (WA State Plane N, NAD 83, ft.) Total Depth: 16.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.10 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | ORGANIC SOIL WITH SAND (OL/OH), few subround cobble, (stiff), moist, brown, occasional iron oxide staining, roots and organic fines. | 0 |
| | | | | | | | | SILTY SAND (SM), few subround cobble, (dense), moist, brown to gray-brown to red-brown, frequent iron oxide staining. | |
| 755 | | | | | | | | FAT CLAY (CH), (stiff), moist, dark gray to black. | |
| | | | | S-1 | 3.7 | NS | | | |
| | | | | S-2 | 1.4 | NS | | | |
| | 5 | | | | | | | grades to FAT CLAY WITH SAND (CH), trace subangular travel, stiff, dark gray | 5 |
| 750 | | | 6 | | 0.5 | NS | | | |
| | | | | | | | | CLAYEY SAND (SC), few subround cobble, (dense), moist, gray to red-brown. groundwater seepage at 9 ft. | |
| | 10 | | | S-3 | 0.3 | NS | | | 10 |
| 745 | | | | | | | | | |
| | | | | S-4 | 193.4 | | | | |
| | 15 | | | | | | | | 15 |
| | | | | | | | | Bottom of Test Pit at 16.0 feet. | |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-55 (TP-40)**

Figure **C-42**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINT\HC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuttel

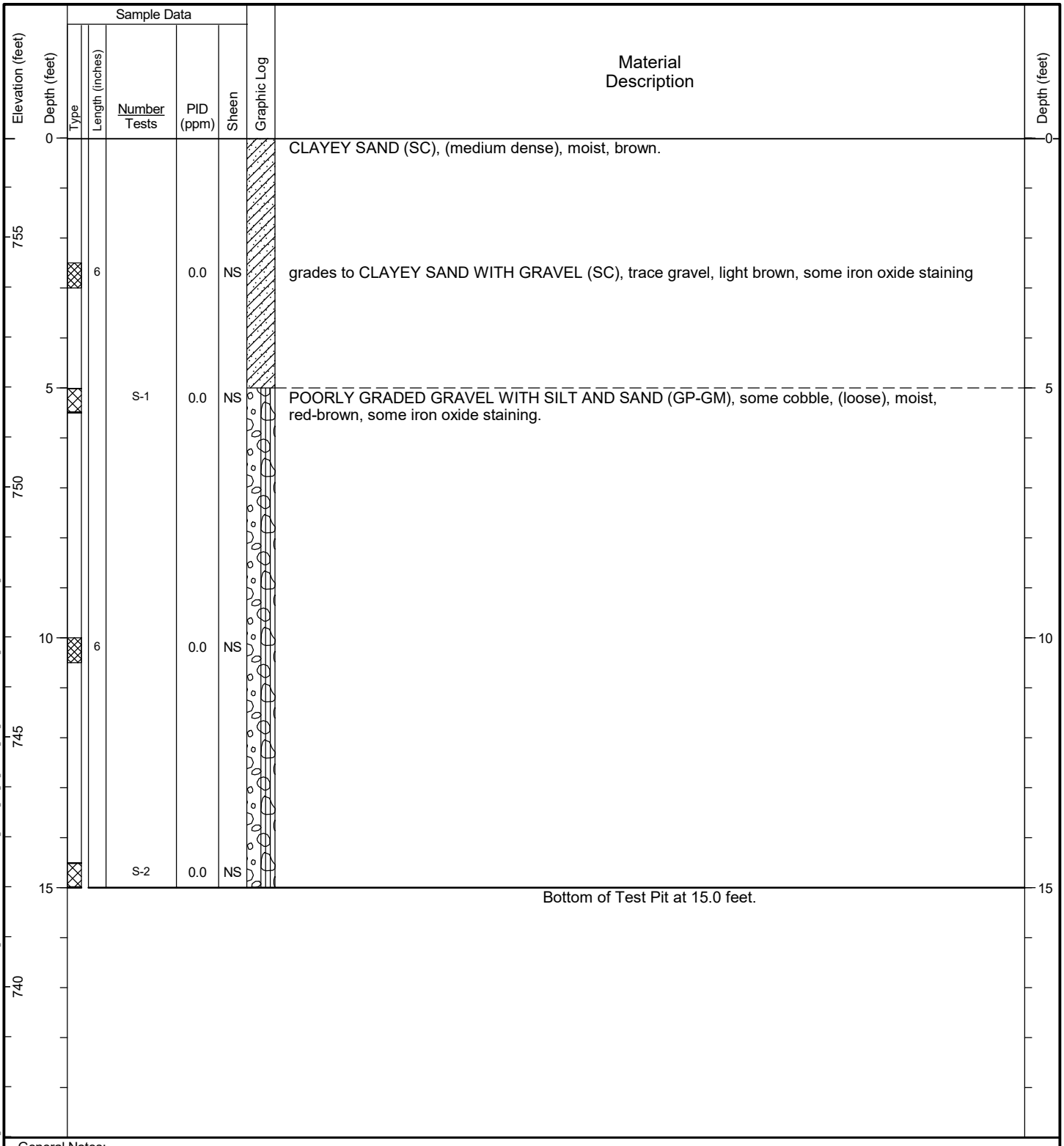
Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge

Logged by: M. Bradshaw Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,192.57 E: 1,214,729.67 (WA State Plane N, NAD 83, ft.) Total Depth: 15.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 756.98 feet (Tacoma City Light (TCL) Datum)

Comments:




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-56**

Figure **C-43**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,012.71 E: 1,214,236.61 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 753.34 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 753.34 | 0 | | | | | | | SILT (ML), (soft), moist, dark brown, some organics (roots). | 0 |
| 750 | | | 6 | | 0.0 | NS | | | |
| | 5 | | | S-1 | 0.0 | NS | | | 5 |
| 745 | | | 6 | | 0.0 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, brown. | |
| | 10 | | | S-2 | 0.0 | NS | | Bottom of Test Pit at 10.0 feet. | 10 |
| 740 | 15 | | | | | | | | 15 |
| 735 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-57**

Figure **C-44**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholtef

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge

Logged by: M. Bradshaw Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,235.63 E: 1,214,651.54 (WA State Plane N, NAD 83, ft.) Total Depth: 15.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 756.11 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| 756 | 0 | | | | | | | SANDY LEAN CLAY (CL), (medium stiff), moist, dark gray. | 0 |
| | | | 6 | | 0.0 | NS | | CLAYEY SAND (SC), (medium dense), moist, gray-brown, some iron oxide staining. | |
| 755 | 5 | | | S-1 | 0.0 | NS | | POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM), few cobbles, (loose), moist, brown, pockets of gray sandy lean clay (cl). | 5 |
| 750 | 10 | | 6 | | 0.0 | NS | | | 10 |
| 745 | 15 | | | S-2 | 0.0 | NS | | Bottom of Test Pit at 15.0 feet. | 15 |
| 740 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-58**

Figure **C-45**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuttel

Date Started: 05/04/2022 Date Completed: 05/04/2022 Contractor/Crew: Rivers Edge / Kevin

Logged by: B. Lytle/ Goldstein Checked by: C. Orr Rig Model/Type: Volvo 160

Location: N: 427,140.01 E: 1,214,691.17 (WA State Plane N, NAD 83, ft.) Total Depth: 17.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 757.28 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description |
|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | ORGANIC SOIL WITH SAND (OL/OH), (stiff), moist, brown to red-brown, roots and wood debris. |
| | | | | | | | | SILTY SAND WITH GRAVEL (SM), few cobble and boulders, (dense), moist, brown to gray-brown to red-brown, metal and wood debris. |
| 755 | | | 6 | | 0.0 | NS | | CLAYEY SAND (SC), trace gravel, (dense), moist, brown to red-brown, frequent iron oxide staining. |
| | | | | | | | | FAT CLAY (CH), (stiff), moist, dark gray, strong petroleum-like odor. |
| | 5 | | | S-1 | 49.1 | SS | | |
| 750 | | | 6 | | 25.6 | SS | | |
| | | | | S-2 | 113.8 | NS | | CLAYEY SAND WITH GRAVEL (SC), few subround cobble, (dense), wet, gray. groundwater seepage at 9 ft. |
| | 10 | | | | | | | |
| 745 | | | 6 | | 22.5 | NS | | |
| | 15 | | | S-3 | 168.7 | NS | | |
| 740 | | | | | | | | Bottom of Test Pit at 17.0 feet. |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-59 (TP-44)**

Figure **C-46**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 427,022.14 E: 1,214,357.95 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 754.71 feet (Tacoma City Light (TCL) Datum)

Comments:

| Elevation (feet) | Depth (feet) | Sample Data: Type | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, brown. | 0 |
| | | | 6 | | 0.0 | NS | | LEAN CLAY (CL), (medium stiff), moist, gray. | |
| 750 | | | | | | | | solidified petroleum product at 4 ft. | |
| | 5 | | | S-1 | 0.0 | NS | | | 5 |
| | | | | | | | | SILTY SAND WITH GRAVEL (SM), (dense), moist, red-brown. | |
| | | | 6 | | 0.0 | NS | | | |
| 745 | 10 | | | S-2 | 0.0 | NS | | Bottom of Test Pit at 10.0 feet. | 10 |
| 740 | 15 | | | | | | | | 15 |
| 735 | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-60 (TP-41)**

Figure **C-47**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTWC_LIBRARY.GLB - 8/19/25 17:06 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kholef

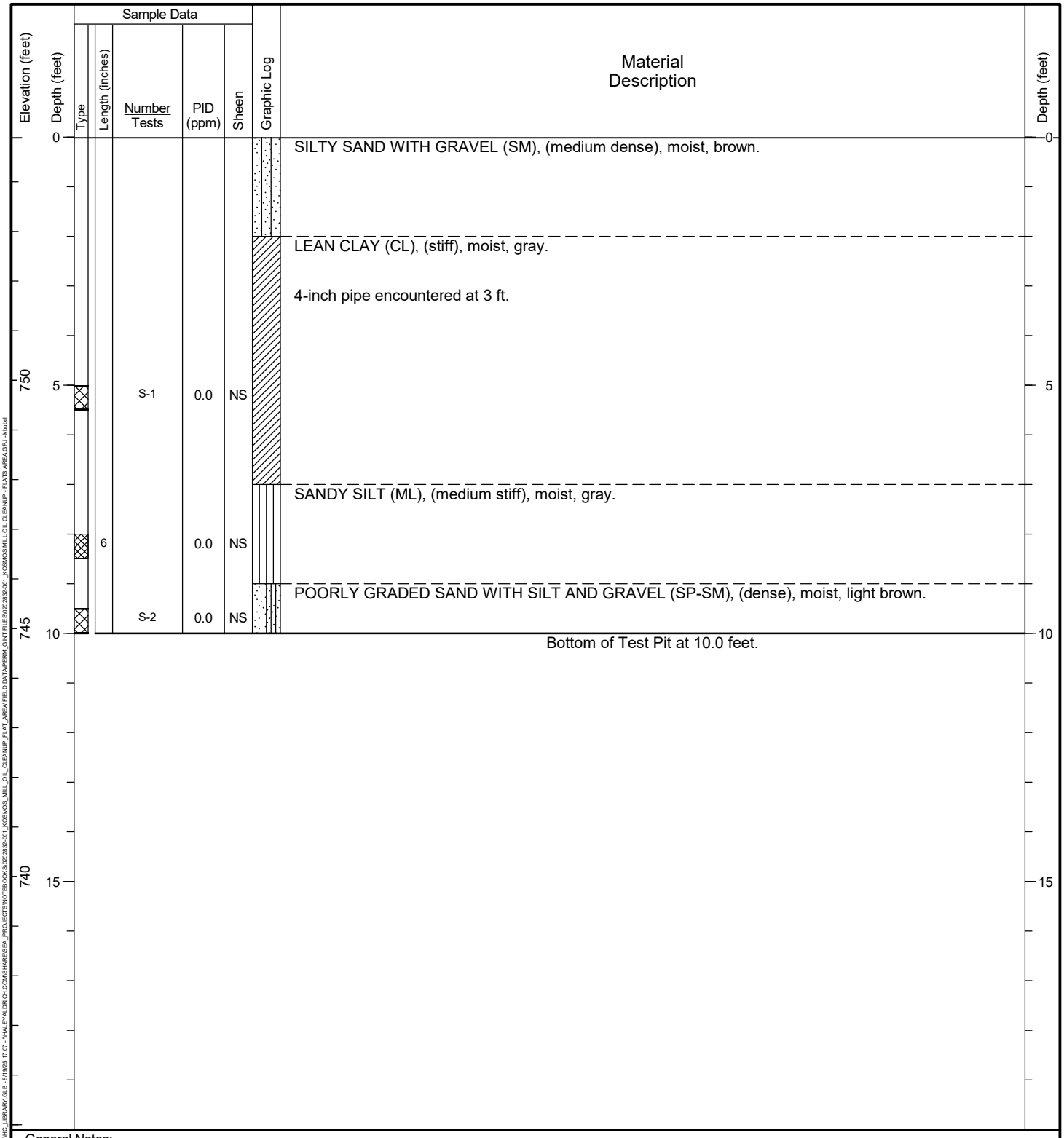
Date Started: 05/05/2022 Date Completed: 05/05/2022 Contractor/Crew: Rivers Edge / Joel

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type:

Location: N: 426,984.30 E: 1,214,369.79 (WA State Plane N, NAD 83, ft.) Total Depth: 10.0 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 754.90 feet (Tacoma City Light (TCL) Datum)

Comments:




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Test Pit Log
**TP-61 (TP-47)**

Figure **C-48**
Sheet **1 of 1**

HA TEST PIT - \\HALEYALDRICH.COM\SHARESEA_DATA\GINT\HC_LIBRARY.GLB - 8/19/25 17:07 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - kbutler

| | | | |
|---|---|---|---|
| Date Started: 10/26/2022 | Date Completed: 10/26/2022 | Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon | |
| Logged by: A. Nakahara | Checked by: C. Orr | Rig Model/Type: TSi 150CC / Track-mounted drill rig | |
| Location: N: 427,282.99 E: 1,214,509.24 (WA State Plane N, NAD 83, ft.) | | Hole Diameter: 8 inches | Well Casing Diameter: NA |
| Ground Surface Elevation: 753.70 feet (Tacoma City Light (TCL) Datum) | | Total Depth: 50.0 feet | Depth to Groundwater: 37 feet |
| Comments: Temporary well (B-11-W) Grab groundwater was collected from a temporary well screened from a depth of 36 to 41 feet. | | | |

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 750 | 0 | | | | | | | | LEAN CLAY (CL), (medium stiff), brown, moist. | | 0 |
| | 5 | | 120in. | 120 | B11-S1-5<br>B11-S1D | 0.3 | NS | | grades to gray, some iron oxide staining from 3 to 5 ft<br>slight petroleum-like odor from 4 to 6 ft | | 5 |
| 745 | 10 | | | | B11-S2-10 | 0.2 | NS | | SILTY SAND WITH GRAVEL (SM), few cobbles, (medium dense), red-brown, moist, fine to medium sand.<br>grades to brown | | 10 |
| 740 | 15 | | 120in. | 120 | B11-S3-15 | 0.4 | NS | | | | 15 |
| 735 | 20 | | | | B11-S4-20 | 0.3 | NS | | | | 20 |
| 730 | 25 | | 120in. | 120 | B11-S5-25 | 0.3 | NS | | | | 25 |
| 725 | 30 | | | | B11-S6-30 | 0.1 | NS | | POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), (medium dense), brown, moist, medium to coarse sand. | | 30 |
| 720 | 35 | | 120in. | 120 | B11-S7-35 | 0.3 | NS | | | ATD | 35 |
| 715 | | | | | B11-S8-40 | 0.3 | NS | | SILTY GRAVEL WITH SAND (GM), (medium dense), brown, wet, medium to coarse sand. | | |

General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-11**

Figure **C-49**
Sheet **1 of 2**

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Date Started: 10/26/2022 Date Completed: 10/26/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,282.99 E: 1,214,509.24 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 753.70 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 37 feet

Comments: Temporary well (B-11-W) Grab groundwater was collected from a temporary well screened from a depth of 36 to 41 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 710 | 40 | | | | | | | | SILTY GRAVEL WITH SAND (GM), (medium dense), brown, wet, medium to coarse sand. *(continued)* | | 40 |
| | | | | | B11-S9-45 | 0.2 | NS | | | | |
| | 45 | | 120in. | 120 | | | | | | | 45 |
| 705 | | | | | B11-S10-50 | 0.2 | NS | | sand layer (1-inch thick) | | |
| | 50 | | | | | | | | Bottom of Borehole at 50.0 feet. | | 50 |
| 700 | 55 | | | | | | | | | | 55 |
| 695 | 60 | | | | | | | | | | 60 |
| 690 | 65 | | | | | | | | | | 65 |
| 685 | 70 | | | | | | | | | | 70 |
| 680 | 75 | | | | | | | | | | 75 |
| 675 | | | | | | | | | | | |

General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-11**

Figure **C-49**
Sheet **2 of 2**

HA PUSH PROBE - I:\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY GLB 8/1/923.17.07 I:\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - k.hubert

Date Started: 10/24/2022 Date Completed: 10/24/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,023.71 E: 1,214,315.79 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 753.82 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 39 feet

Comments: Temporary well (B-12-W) Grab groundwater was collected from a temporary well screened from a depth of 39 to 44 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 753.82 | 0 | | | | | | | | Topsoil (6-inches thick) | | 0 |
| | | | | | | | | | LEAN CLAY (CL), (stiff), moist, gray-brown. | | |
| 750 | | | | | B12-S1-5 | 0.2 | SS | | slight petroleum-like odor from 2.5 to 5 ft | | |
| | 5 | | 84in. | 120 | B12-S2-7 | 0.1 | NS | | | | 5 |
| | | | | | | | | | SILTY SAND WITH GRAVEL (SM), few cobbles, (medium dense), moist, red-brown. | | |
| 745 | | | | | | | | | | | |
| | 10 | | | | B12-S3-15 | 0.1 | NS | | grades to light brown to gray from 12 to 17 ft | | 10 |
| | 15 | | 120in. | 120 | | | | | | | 15 |
| 740 | | | | | B12-S4-20 | 0.2 | NS | | grades to red-brown from 17 to 20 ft | | |
| | 20 | | | | | | | | SANDY SILT WITH GRAVEL (ML), few cobbles, (stiff), moist, gray-brown. | | 20 |
| 735 | | | | | B12-S5-25 | 0.2 | NS | | | | |
| | 25 | | 120in. | 120 | | | | | | | 25 |
| 730 | | | | | B12-S6-30 | 0.1 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, brown. | | |
| | 30 | | | | | | | | | | 30 |
| 725 | | | | | B12-S7-35 | 0.1 | NS | | | | |
| | 35 | | 120in. | 120 | | | | | | | 35 |
| 720 | | | | | B12-S8-40 | 0.1 | NS | | | ATD | |
| 715 | | | | | | | | | | | |

General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-12**

Figure **C-50**
Sheet **1 of 2**

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Date Started: 10/24/2022 Date Completed: 10/24/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,023.71 E: 1,214,315.79 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 753.82 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 39 feet

Comments: Temporary well (B-12-W) Grab groundwater was collected from a temporary well screened from a depth of 39 to 44 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 710 | 40 | | | | | | | | SILTY GRAVEL WITH SAND (GM), wet, dark brown, medium to coarse sand. | | 40 |
| | | | | | B12-S9-45 | 0.0 | NS | | | | |
| | 45 | | 120in. | 120 | | | | | layer of SANDY SILT (ML) from 43 to 44 ft | | 45 |
| 705 | | | | | B12-S10-50 | 0.0 | NS | | | | |
| | 50 | | | | | | | | Bottom of Borehole at 50.0 feet. | | 50 |
| 700 | 55 | | | | | | | | | | 55 |
| 695 | 60 | | | | | | | | | | 60 |
| 690 | 65 | | | | | | | | | | 65 |
| 685 | 70 | | | | | | | | | | 70 |
| 680 | 75 | | | | | | | | | | 75 |
| 675 | | | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-12**

Figure **C-50**
Sheet **2 of 2**

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Date Started: 10/25/2022 Date Completed: 10/25/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,022.69 E: 1,214,619.25 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 757.99 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 39 feet

Comments: Temporary well (B-13-W) Grab groundwater was collected from a temporary well screened from a depth of 38 to 43 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 757.99 | 0 | | | | | | | | Topsoil (6-inches thick) | | 0 |
| | | | | | B-13-S1-5 | 0.0 | NS | | SILTY SAND WITH GRAVEL (SM), moist, brown. | | |
| | | | | | | | | | SANDY SILT WITH GRAVEL (ML), (stiff), moist, gray-brown. | | |
| 755 | | | | | | | | | no recovery | | |
| | 5 | | 30in. | 120 | | | | | | | 5 |
| 750 | | | | | | | | | | | |
| | 10 | | | | B13-S2-10 | 0.1 | NS | | SILTY SAND WITH GRAVEL (SM), few cobbles, (dense), moist, brown to gray-brown. | | 10 |
| 745 | | | | | | | | | | | |
| | 15 | | | | B13-S3-15 | 0.1 | NS | | | | 15 |
| 740 | | | | | B13-S4-20 | 0.1 | NS | | | | |
| | 20 | | | | | | | | becomes red-brown | | 20 |
| 735 | | | | | B13-S5-25 | 0.0 | NS | | becomes brown | | |
| | 25 | | 120in. | 120 | | | | | | | 25 |
| 730 | | | | | B13-S6-30 | 0.2 | NS | | | | |
| | 30 | | | | | | | | | | 30 |
| 725 | | | 60in. | 60 | B13-S7-35 | 0.1 | NS | | | | |
| | 35 | | | | | | | | POORLY GRADED SAND WITH GRAVEL (SP-SM), (medium dense), moist, brown. | | 35 |
| 720 | | | | | B13-S8-40 | 0.1 | NS | | SILTY GRAVEL WITH SAND (GM), (medium dense), wet, brown, medium to coarse sand. | ATD | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-13**

Figure **C-51**
Sheet **1 of 2**

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Date Started: 10/25/2022 Date Completed: 10/25/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,022.69 E: 1,214,619.25 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 757.99 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 39 feet

Comments: Temporary well (B-13-W) Grab groundwater was collected from a temporary well screened from a depth of 38 to 43 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 715 | 40 | | | | | | | | SILTY GRAVEL WITH SAND (GM), (medium dense), wet, brown, medium to coarse sand. *(continued)* | | 40 |
| | | | 120in. | 120 | B13-S9-45 | 0.1 | NS | | | | |
| | 45 | | | | | | | | POORLY GRADED GRAVEL WITH SAND (GP), (medium dense), wet, brown. | | 45 |
| 710 | | | 60in. | 60 | B13-S10-50 | 0.1 | NS | | POORLY GRADED SAND WITH GRAVEL (SP), (medium dense), wet, brown. | | |
| | 50 | | | | | | | | Bottom of Borehole at 50.0 feet. | | 50 |
| 705 | | | | | | | | | | | |
| | 55 | | | | | | | | | | 55 |
| 700 | | | | | | | | | | | |
| | 60 | | | | | | | | | | 60 |
| 695 | | | | | | | | | | | |
| | 65 | | | | | | | | | | 65 |
| 690 | | | | | | | | | | | |
| | 70 | | | | | | | | | | 70 |
| 685 | | | | | | | | | | | |
| | 75 | | | | | | | | | | 75 |
| 680 | | | | | | | | | | | |

General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-13**

Figure **C-51**
Sheet **2 of 2**

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Date Started: 10/26/2022 Date Completed: 10/26/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,155.98 E: 1,214,639.68 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 757.24 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 38.5 feet

Comments: Temporary well (B-14-W) Grab groundwater was collected from a temporary well screened from a depth of 37.5 to 42.5 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 755 | 0 | | | | | | | | Crushed aggregate (8-inches thick) | | 0 |
| | | | | | | | | | SILTY SAND WITH GRAVEL (SM), moist, brown. | | |
| | | | | | | | | | POORLY GRADED SAND WITH GRAVEL (SP), moist, light brown. | | |
| | | | | | | | | | organics (wood debris) (6-inch thick) | | |
| | | | | | B14-S1-5 | 0.0 | NS | | LEAN CLAY WITH GRAVEL (CL), (medium stiff), moist, dark gray, slight organic odor. | | |
| | 5 | | 48in. | 120 | | | | | no recovery | | 5 |
| 750 | | | | | | | | | | | |
| | 10 | | | | B14-S2-10 | 0.1 | NS | | SILTY SAND WITH GRAVEL (SM), few cobbles, (medium dense), moist, brown, medium to coarse sand. | | 10 |
| | | | | | | | | | becomes gray-brown, fine to medium sand | | |
| 745 | 15 | | 108in. | 120 | B14-S3-15 | 0.1 | NS | | | | 15 |
| | | | | | B14-S4-19 | 0.1 | NS | | | | |
| 740 | 20 | | | | | | | | | | 20 |
| | | | | | B14-S5-25 | 0.1 | NS | | becomes brown, grades to light brown | | |
| 735 | 25 | | 100in. | 120 | | | | | | | 25 |
| | | | | | B14-S6-28 | 0.1 | NS | | | | |
| 730 | 30 | | | | | | | | | | 30 |
| | | | | | B14-S7-35 | 0.1 | NS | | POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), (medium dense), moist, brown, medium to coarse sand. | | |
| 725 | 35 | | 120in. | 120 | | | | | | | 35 |
| | | | | | B14-S8-40 | 0.1 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, light brown to gray, fine to medium sand. | ATD | |
| 720 | | | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-14**

Figure **C-52**
Sheet **1 of 2**

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Date Started: 10/26/2022 Date Completed: 10/26/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,155.98 E: 1,214,639.68 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 757.24 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 38.5 feet

Comments: Temporary well (B-14-W) Grab groundwater was collected from a temporary well screened from a depth of 37.5 to 42.5 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 715 | 40 | | | | | | | | SILTY GRAVEL WITH SAND (GM), few cobbles, (medium dense), wet, brown, occasional layers of medium to coarse sand. | | 40 |
| | | | | | B14-S9-45 | 0.1 | NS | | | | |
| | 45 | 120in. | 120 | | | | | | | | 45 |
| 710 | | | | | B14-S10-50 | 0.2 | NS | | | | |
| | 50 | | | | | | | | Bottom of Borehole at 50.0 feet. | | 50 |
| 705 | | | | | | | | | | | |
| | 55 | | | | | | | | | | 55 |
| 700 | | | | | | | | | | | |
| | 60 | | | | | | | | | | 60 |
| 695 | | | | | | | | | | | |
| | 65 | | | | | | | | | | 65 |
| 690 | | | | | | | | | | | |
| | 70 | | | | | | | | | | 70 |
| 685 | | | | | | | | | | | |
| | 75 | | | | | | | | | | 75 |
| 680 | | | | | | | | | | | |

General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-14**

Figure **C-52**
Sheet **2 of 2**

HA PUSH PROBE - I:\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY.GLB 8/11/923 17:07 I:\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

Date Started: 10/26/2022 Date Completed: 10/26/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 426,981.06 E: 1,214,483.27 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 757.68 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 38 feet

Comments: Temporary well (B-15-W) Grab groundwater was collected from a temporary well screened from a depth of 38 to 43 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 755 | 0 | | | | B15-S1-5 | 0.1 | NS | | SILTY SAND WITH GRAVEL (SM), (loose), moist, light gray, cobbles blocked casing. | | 0 |
| | 5 | | 30in. | 120 | | | | | no recovery | | 5 |
| 750 | 10 | | | | B15-S2-15 | 0.0 | NS | | grades to some cobbles, dense, gray-brown | | 10 |
| 745 | 15 | | 120in. | 120 | | | | | | | 15 |
| 740 | 20 | | | | B15-S3-20 | 0.0 | NS | | | | 20 |
| 735 | 25 | | | | B15-S4-25 | 0.2 | NS | | | | 25 |
| 730 | 30 | | 120in. | 120 | B15-S5-30 | 0.0 | NS | | POORLY GRADED SAND WITH GRAVEL (SP), few cobbles, (loose), moist, brown, fine to medium sand. | | 30 |
| | | | | | | | | | SANDY SILT WITH GRAVEL (ML), (stiff), moist, gray-brown. | | |
| 725 | 35 | | | | B15-S6-35 | 0.1 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, brown, fine to medium sand. | | 35 |
| 720 | | | 120in. | 120 | B15-S7-40 | 0.1 | NS | | | ATD | |

General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-15**

Figure **C-53**
Sheet **1 of 2**

HA PUSH PROBE - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY (SLB - 8/1/9/23 17:07 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\FIELD_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - k.bohl

Date Started: 10/26/2022 Date Completed: 10/26/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 426,981.06 E: 1,214,483.27 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 757.68 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 38 feet

Comments: Temporary well (B-15-W) Grab groundwater was collected from a temporary well screened from a depth of 38 to 43 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 715 | 40 | | | | | | | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, brown, fine to medium sand. *(continued)* | | 40 |
| | | | | | B15-S8-45 | 0.0 | NS | | POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), few cobbles, (loose), wet, brown, medium to coarse sand. | | |
| | 45 | 120in. | 120 | | | | | | | | 45 |
| 710 | | | | | B15-S9-50 | 0.0 | NS | | | | |
| | 50 | | | | | | | | Bottom of Borehole at 50.0 feet. | | 50 |
| 705 | | | | | | | | | | | |
| | 55 | | | | | | | | | | 55 |
| 700 | | | | | | | | | | | |
| | 60 | | | | | | | | | | 60 |
| 695 | | | | | | | | | | | |
| | 65 | | | | | | | | | | 65 |
| 690 | | | | | | | | | | | |
| | 70 | | | | | | | | | | 70 |
| 685 | | | | | | | | | | | |
| | 75 | | | | | | | | | | 75 |
| 680 | | | | | | | | | | | |

General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-15**

Figure **C-53**
Sheet **2 of 2**

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| | | | |
|---|---|---|---|
| Date Started: 10/26/2022 | Date Completed: 10/26/2022 | Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon | |
| Logged by: A. Nakahara | Checked by: C. Orr | Rig Model/Type: TSi 150CC / Track-mounted drill rig | |
| Location: N: 427,262.34 E: 1,214,738.05 (WA State Plane N, NAD 83, ft.) | | Hole Diameter: 8 inches | Well Casing Diameter: NA |
| Ground Surface Elevation: 756.65 feet (Tacoma City Light (TCL) Datum) | | Total Depth: 50.0 feet | Depth to Groundwater: 38 feet |

Comments: Temporary well (B-16-W) Grab groundwater was collected from a temporary well screened from a depth of 37 to 42 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 755 | 0 | | | | | | | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, dark brown. | | 0 |
| | | | | | B16-S1-5 | 0.2 | NS | | LEAN CLAY WITH SAND (CL), (stiff), moist, gray, some iron oxide staining. | | |
| | 5 | | 84in. | 120 | | | | | | | 5 |
| 750 | | | | | B16-S2-7 | 0.2 | NS | | slight organic odor from 6 to 7 ft | | |
| | | | | | | | | | no recovery | | |
| | 10 | | | | | | | | SILTY SAND WITH GRAVEL (SM), few cobbles, (medium dense), moist, red-brown, fine to medium sand. becomes brown, grades to light brown to gray | | 10 |
| 745 | | | | | B16-S3-15 | 0.2 | NS | | | | |
| | 15 | | 120in. | 120 | | | | | | | 15 |
| 740 | | | | | B16-S4-20 | 0.4 | NS | | | | |
| | 20 | | | | | | | | | | 20 |
| 735 | | | | | B16-S5-25 | 0.3 | NS | | POORLY GRADED SAND WITH GRAVEL (SP), (medium dense), moist, red-brown, medium to coarse sand. | | |
| | 25 | | 120in. | 120 | | | | | SANDY SILT WITH GRAVEL (ML), (medium stiff), moist, brown, fine to medium sand. | | 25 |
| 730 | | | | | B16-S6-30 | 0.3 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, brown, fine to medium sand. | | |
| | 30 | | | | | | | | | | 30 |
| 725 | | | | | B16-S7-35 | 0.3 | NS | | POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), (medium dense), moist, brown, medium to coarse sand. | | |
| | 35 | | 120in. | 120 | | | | | | | 35 |
| 720 | | | | | B16-S8-40 | 0.2 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), wet, gray-brown, fine to medium sand. | ATD | |

General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-16**

Figure **C-54**
Sheet **1 of 2**

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Date Started: 10/26/2022 Date Completed: 10/26/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,262.34 E: 1,214,738.05 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 756.65 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 38 feet

Comments: Temporary well (B-16-W) Grab groundwater was collected from a temporary well screened from a depth of 37 to 42 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 715 | 40 | | | | | | | | SILTY GRAVEL WITH SAND (GM), few cobbles, (medium dense), wet, gray-brown, occasional layers of medium to coarse sand. | | 40 |
| | | | 120in. | 120 | B16-S9-45 | 0.2 | NS | | | | |
| 710 | 45 | | | | | | | | | | 45 |
| | | | | | B16-S10-50 | 0.3 | NS | | | | |
| 705 | 50 | | | | | | | | Bottom of Borehole at 50.0 feet. | | 50 |
| 700 | 55 | | | | | | | | | | 55 |
| 695 | 60 | | | | | | | | | | 60 |
| 690 | 65 | | | | | | | | | | 65 |
| 685 | 70 | | | | | | | | | | 70 |
| 680 | 75 | | | | | | | | | | 75 |

General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-16**

Figure **C-54**
Sheet **2 of 2**

HA PUSH PROBE - I:\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY GLB - 8/1/9231 17:07 - I:\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - k1s5nf

Date Started: 10/25/2022 Date Completed: 10/25/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,184.10 E: 1,214,915.42 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 757.95 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 37 feet

Comments: Temporary well (B-17-W) Grab groundwater was collected from a temporary well screened from a depth of 36 to 41 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 757.95 | 0 | | | | | | | | Topsoil (12-inches thick) | | 0 |
| | | | | | B17-S1-5 | 0.2 | SS | | LEAN CLAY WITH GRAVEL (CL), (medium stiff), moist, dark gray to gray, fine to medium sand. | | |
| 755 | | | | | B17-S1D | 0.1 | NS | | slight organic odor from 2 to 4 ft | | |
| | 5 | | 12in. | 84in. | B17-S2-7 | 0.1 | NS | | SILTY SAND WITH GRAVEL (SM), (medium dense), moist, red-brown. | | 5 |
| 750 | | | | | | | | | no recovery | | |
| | 10 | | | | | | | | POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), (medium dense), moist. | | 10 |
| | | | | | | | | | SILTY SAND WITH GRAVEL (SM), few cobbles, moist, brown, fine to medium sand. | | |
| 745 | | | | | B17-S3-15 | 0.1 | NS | | | | |
| | 15 | | 120in. | 120 | | | | | | | 15 |
| 740 | | | | | B17-S4-20 | 0.1 | NS | | | | |
| | 20 | | | | | | | | POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), few cobbles, wet, light brown, coarse sand. | | 20 |
| 735 | | | | | B17-S5-25 | 0.1 | NS | | SILTY SAND WITH GRAVEL (SM), few cobbles, (loose), moist, light gray. | | |
| | 25 | | 120in. | 120 | | | | | | | 25 |
| 730 | | | | | B17-S6-30 | 0.1 | NS | | | | |
| | 30 | | | | | | | | SANDY LEAN CLAY WITH GRAVEL (CL), few cobbles, (stiff), moist, gray-brown, trace organics. | | 30 |
| 725 | | | | | B17-S7-35 | 0.1 | NS | | POORLY GRADED SAND WITH GRAVEL (SP), few cobbles, (medium dense), moist, light brown, medium to coarse sand. | | |
| | 35 | | 120in. | 120 | | | | | | | 35 |
| | | | | | | | | | POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), (medium dense), moist, gray-brown, fine to medium sand. | ATD | |
| 720 | | | | | B17-S8-40 | 0.1 | NS | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-17**

Figure **C-55**
Sheet **1 of 2**

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Date Started: 10/25/2022 Date Completed: 10/25/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,184.10 E: 1,214,915.42 (WA State Plane N, NAD 83, ft.) Hole Diameter: 8 inches Well Casing Diameter: NA

Ground Surface Elevation: 757.95 feet (Tacoma City Light (TCL) Datum) Total Depth: 50.0 feet Depth to Groundwater: 37 feet

Comments: Temporary well (B-17-W) Grab groundwater was collected from a temporary well screened from a depth of 36 to 41 feet.

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 715 | 40 | | | | | | | | SILTY GRAVEL WITH SAND (GM), (medium dense), wet, brown, occasional coarse sand layers. | | 40 |
| | | | | | B17-S9-45 | 0.0 | NS | | | | |
| | 45 | | 120in. | 120 | | | | | | | 45 |
| 710 | | | | | B17-S10-50 | 0.0 | NS | | | | |
| | 50 | | | | | | | | Bottom of Borehole at 50.0 feet. | | 50 |
| 705 | | | | | | | | | | | |
| | 55 | | | | | | | | | | 55 |
| 700 | | | | | | | | | | | |
| | 60 | | | | | | | | | | 60 |
| 695 | | | | | | | | | | | |
| | 65 | | | | | | | | | | 65 |
| 690 | | | | | | | | | | | |
| | 70 | | | | | | | | | | 70 |
| 685 | | | | | | | | | | | |
| | 75 | | | | | | | | | | 75 |
| 680 | | | | | | | | | | | |

General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

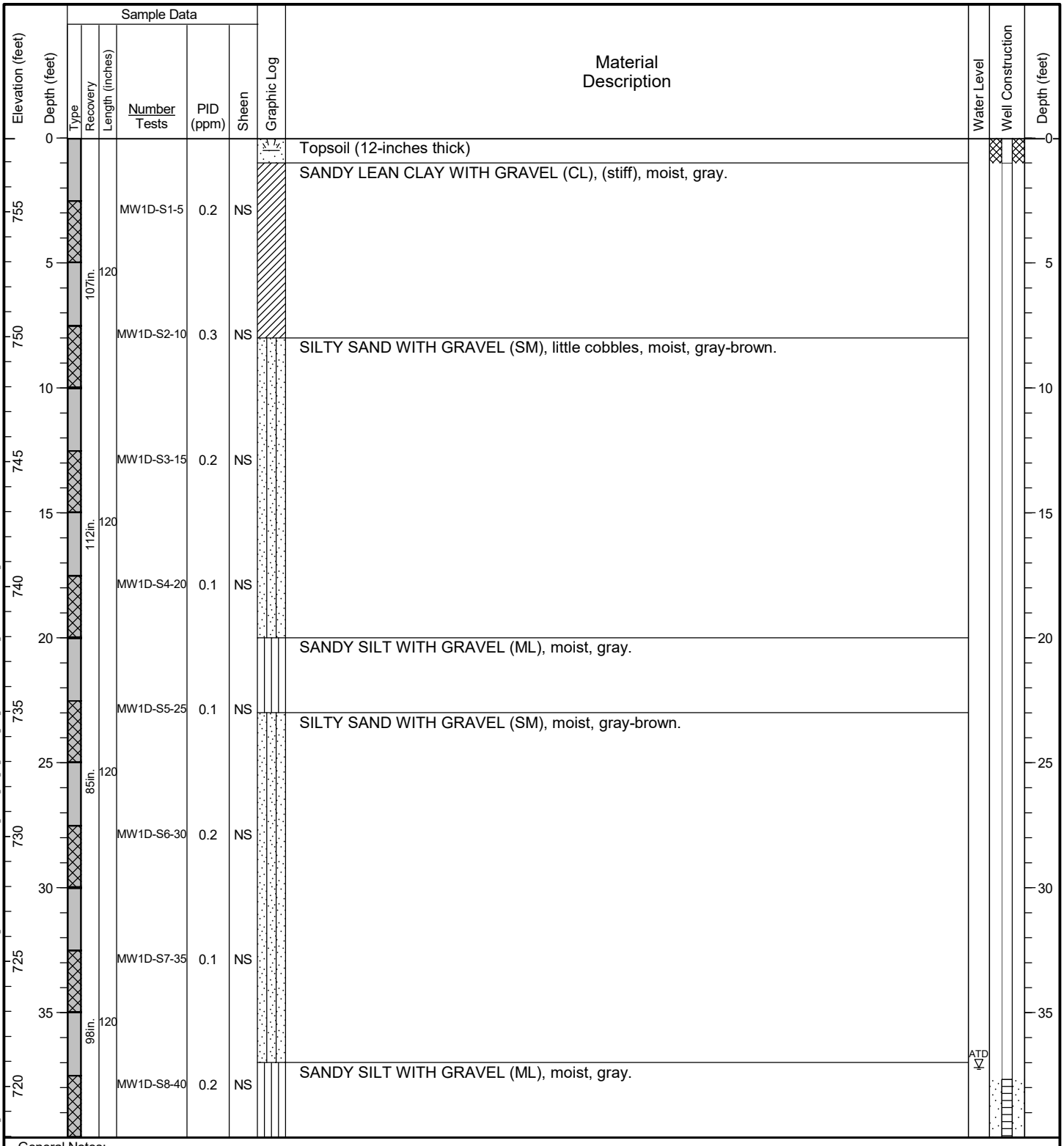
Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**B-17**

Figure **C-55**
Sheet **2 of 2**

HA PUSH PROBE - \\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY GLB 8/1/923 17:07 - \\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOKS\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

| | | | |
|---|---|---|---|
| Date Started: 10/31/2022 | Date Completed: 10/31/2022 | Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon | |
| Logged by: Z. Stephens | Checked by: C. Orr | Rig Model/Type: TSi 150CC / Track-mounted drill rig | |
| Location: N: 427,060.77 E: 1,214,723.60 (WA State Plane N, NAD 83, ft.) | | Hole Diameter: 6 inches | Well Casing Diameter: OD: 8 inches |
| Ground Surface Elevation: 757.95 feet (Tacoma City Light (TCL) Datum) | | Total Depth: 60.0 feet | Depth to Groundwater: 37.2 feet |
| Comments: Well Tag ID: BNM511 | | | |




General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

| | | | |
|---|---|---|---|
| HALEY ALDRICH | Project: KOSMOS MILL OIL CLEANUP - FLATS AREA<br>Location: GLENOMA, WASHINGTON<br>Project No.: 0202832-001 | Sonic Core Log<br>**MW-1D** | Figure **C-56**<br>Sheet **1 of 2** |

HA PUSH PROBE - I:\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY GLB - 8/1/923 17:09 - I:\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

Date Started: 10/31/2022 Date Completed: 10/31/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: Z. Stephens Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,060.77 E: 1,214,723.60 (WA State Plane N, NAD 83, ft.) Hole Diameter: 6 inches Well Casing Diameter: OD: 8 inches

Ground Surface Elevation: 757.95 feet (Tacoma City Light (TCL) Datum) Total Depth: 60.0 feet Depth to Groundwater: 37.2 feet

Comments: Well Tag ID: BNM511

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Well Construction | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40 | | | | | | | | SANDY SILT WITH GRAVEL (ML), moist, gray. *(continued)* becomes wet | | | 40 |
| 715 | | | | | MW1D-S9-45 | 0.3 | NS | | SILTY SAND WITH GRAVEL (SM), little cobbles, wet, gray. | | | |
| | 45 | 109in. | | 120 | | | | | | | | 45 |
| 710 | | | | | MW1D-S10-50 | 0.2 | NS | | | | | |
| | 50 | | | | | | | | SANDY SILT WITH GRAVEL (ML), wet, gray. | | | 50 |
| 705 | | | | | MW1D-S11-55 | 0.2 | NS | | | | | |
| | 55 | 120in. | | 120 | | | | | SILTY SAND WITH GRAVEL (SM), wet, gray. | | | 55 |
| 700 | | | | | MW1D-S12-60 | 0.1 | NS | | SANDY SILT WITH GRAVEL (ML), (stiff), moist, gray. | | | |
| | 60 | | | | | | | | Bottom of Borehole at 60.0 feet. | | | 60 |
| 695 | | | | | | | | | | | | |
| | 65 | | | | | | | | | | | 65 |
| 690 | | | | | | | | | | | | |
| | 70 | | | | | | | | | | | 70 |
| 685 | | | | | | | | | | | | |
| | 75 | | | | | | | | | | | 75 |
| 680 | | | | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**MW-1D**

Figure **C-56**
Sheet **2 of 2**

HA PUSH PROBE - I:\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY GLB - 8/1/923.17.08 - I:\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOKS\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

| | | | |
|---|---|---|---|
| Date Started: 06/27/2022 | Date Completed: 06/27/2022 | Contractor/Crew: Holt Services, Inc. / Marlen/David/Jager | |
| Logged by: A. Nakahara | Checked by: C. Orr | Rig Model/Type: TSi 150CC / Track-mounted drill rig | |
| Location: N: 427,070.06 E: 1,214,727.68 (WA State Plane N, NAD 83, ft.) | | Hole Diameter: 6 inches | Well Casing Diameter: OD: 2 inches |
| Ground Surface Elevation: 757.90 feet (Tacoma City Light (TCL) Datum) | | Total Depth: 20.0 feet | Depth to Groundwater: 6 feet |
| Comments: Well Tag ID: BNL578 | | | |

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Well Construction | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 757.9 | 0 | | | | | | | | SILTY SAND WITH GRAVEL (SM), moist, dark brown, petroleum-like odor, few organics (wood). | | | 0 |
| | | | | | S1 | 0.6 | NS | | becomes gray | | | |
| 755 | 5 | 120in. | 120 | | | | | | | ▽ 6/27/2022 | | 5 |
| | | | | | S2 | 0.6 | SS | | SILTY GRAVEL WITH SAND (GM), moist, brown. | | | |
| 750 | 10 | | | | | | | | POORLY GRADED GRAVEL WITH SAND (GP), moist, brown. | | | 10 |
| | | | | | S3 | 1.4 | SS | | SILTY GRAVEL WITH SAND (GM), few cobble, moist, brown. | | | |
| 745 | 15 | 120in. | 120 | | | | | | | | | 15 |
| | | | | | S4 | 0.4 | NS | | becomes gray | | | |
| 740 | 20 | | | | | | | | Bottom of Borehole at 20.0 feet. | | | 20 |
| 735 | 25 | | | | | | | | | | | 25 |
| 730 | 30 | | | | | | | | | | | 30 |
| 725 | 35 | | | | | | | | | | | 35 |
| 720 | | | | | | | | | | | | |

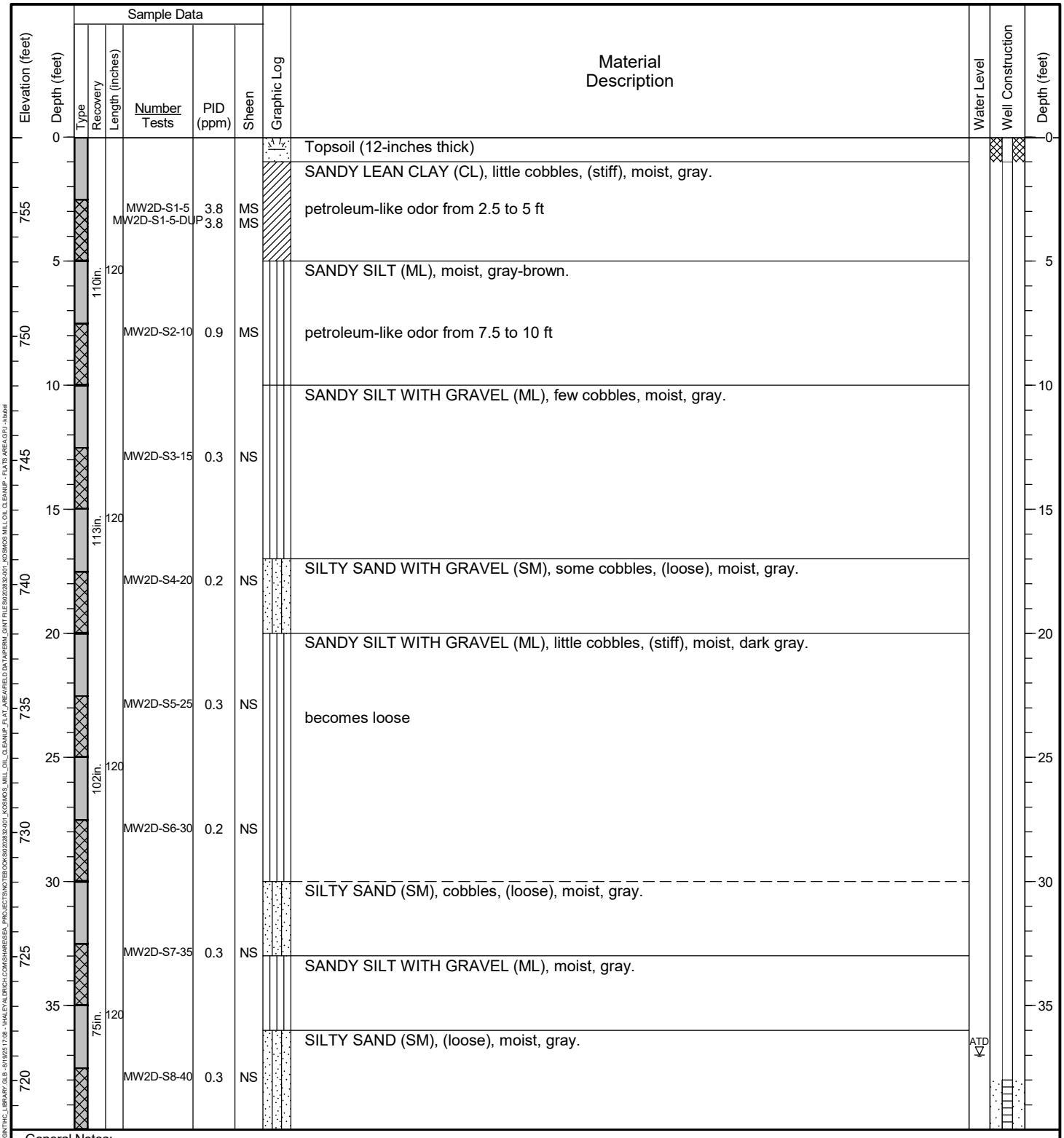
General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

| | | | |
|---|---|---|---|
| Project: KOSMOS MILL OIL CLEANUP - FLATS AREA<br>Location: GLENOMA, WASHINGTON<br>Project No.: 0202832-001 | Sonic Core Log<br>**MW-1S** | Figure<br>Sheet | **C-57**<br>**1 of 1** |

HA PUSH PROBE - I:\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY GLB 8/1/923.17.08 I:\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOKS\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\FIELD_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

| | | | |
|---|---|---|---|
| Date Started: 10/28/2022 | Date Completed: 10/28/2022 | Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon | |
| Logged by: Z. Stephens | Checked by: C. Orr | Rig Model/Type: TSi 150CC / Track-mounted drill rig | |
| Location: N: 427,079.78 E: 1,214,569.87 (WA State Plane N, NAD 83, ft.) | | Hole Diameter: 6 inches | Well Casing Diameter: OD: 8 inches |
| Ground Surface Elevation: 758.03 feet (Tacoma City Light (TCL) Datum) | | Total Depth: 58.0 feet | Depth to Groundwater: 37 feet |
| Comments: Well Tag ID: BNM510 | | | |




General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

| | | | |
|---|---|---|---|
| HALEY ALDRICH | Project: KOSMOS MILL OIL CLEANUP - FLATS AREA<br>Location: GLENOMA, WASHINGTON<br>Project No.: 0202832-001 | Sonic Core Log<br>**MW-2D** | Figure **C-58**<br>Sheet **1 of 2** |

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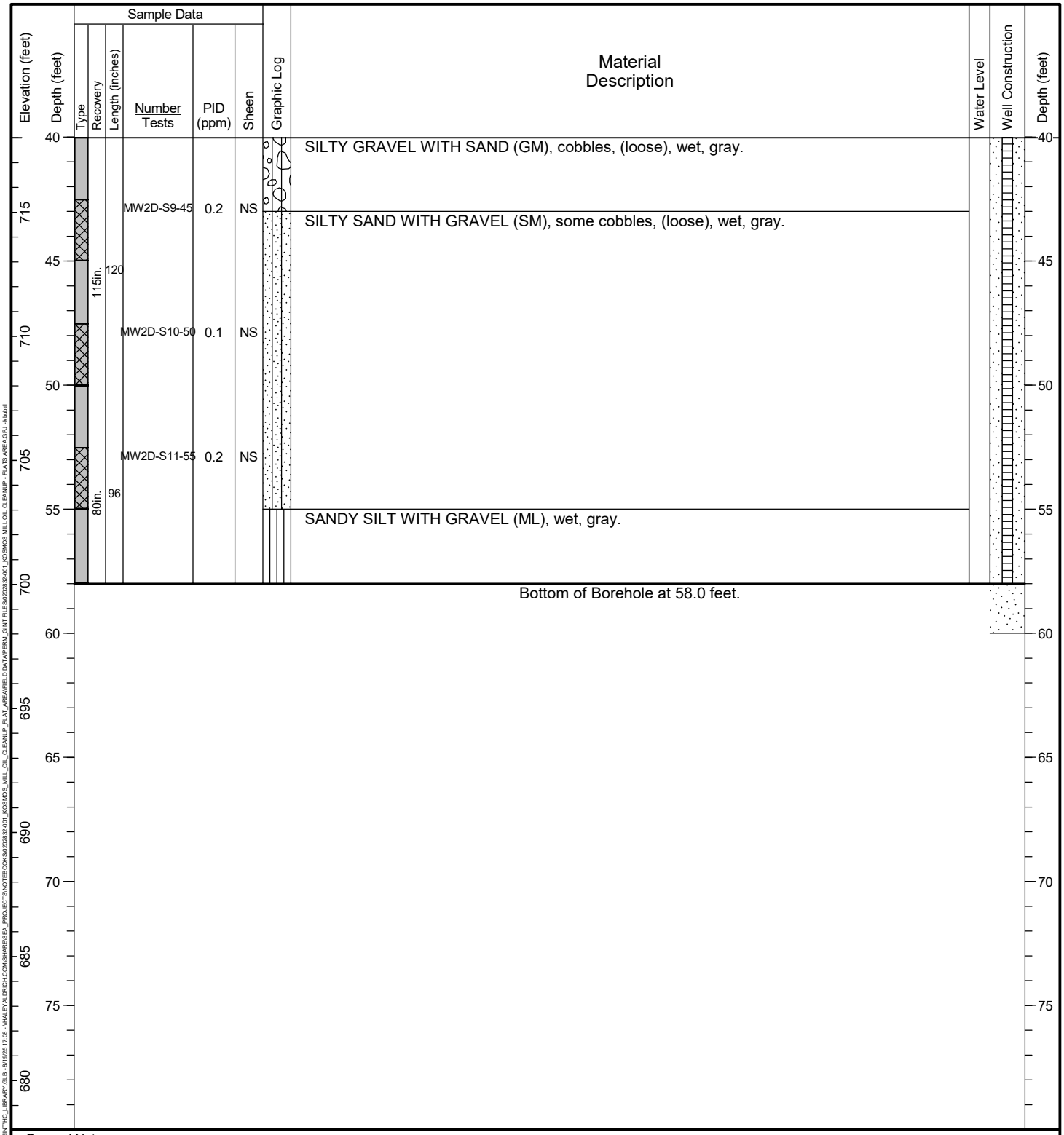
Date Started: 10/28/2022 Date Completed: 10/28/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: Z. Stephens Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,079.78 E: 1,214,569.87 (WA State Plane N, NAD 83, ft.) Hole Diameter: 6 inches Well Casing Diameter: OD: 8 inches

Ground Surface Elevation: 758.03 feet (Tacoma City Light (TCL) Datum) Total Depth: 58.0 feet Depth to Groundwater: 37 feet

Comments: Well Tag ID: BNM510




General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**MW-2D**

Figure **C-58**
Sheet **2 of 2**

HA PUSH PROBE - I:\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY GLB - 8/1/923.17.09 - I:\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOKS\0202832-001_KOSMOS_MILL_OIL CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

Date Started: 06/27/2022 Date Completed: 06/27/2022 Contractor/Crew: Holt Services, Inc. / Marlen/David/Jager

Logged by: A. Nakahara Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,088.37 E: 1,214,572.82 (WA State Plane N, NAD 83, ft.) Hole Diameter: 6 inches Well Casing Diameter: OD: 2 inches

Ground Surface Elevation: 758.00 feet (Tacoma City Light (TCL) Datum) Total Depth: 20.0 feet Depth to Groundwater: 6.5 feet

Comments: Well Tag ID: BNL577

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Well Construction | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 758 | 0 | | | | | | | | Concrete pad (9-inches thick) | | | 0 |
| | | | | | | | | | SILTY GRAVEL WITH SAND (GM), moist, gray. | | | |
| 755 | | | | | S1 | 0.5 | NS | | LEAN CLAY (CL), moist, dark-gray, trace organics (roots). | | | |
| | 5 | 120in. | | 120 | | | | | CLAYEY SAND (SC), moist, gray, petroleum-like odor. | ATD | | 5 |
| 750 | | | | | S2 | 0.9 | NS | | | | | |
| | 10 | | | | | | | | SILTY GRAVEL (GM), moist, gray-brown. | | | 10 |
| | | | | | S3 | 0.6 | NS | | POORLY GRADED SAND (GP), few cobble, moist, brown. | | | |
| 745 | | | | | | | | | SILTY GRAVEL (GM), few cobble, moist, brown. | | | |
| | 15 | 120in. | | 120 | | | | | | | | 15 |
| 740 | | | | | S4 | 0.4 | NS | | becomes gray | | | |
| | 20 | | | | | | | | Bottom of Borehole at 20.0 feet. | | | 20 |
| 735 | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | 25 |
| 730 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | 30 |
| 725 | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | 35 |
| 720 | | | | | | | | | | | | |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

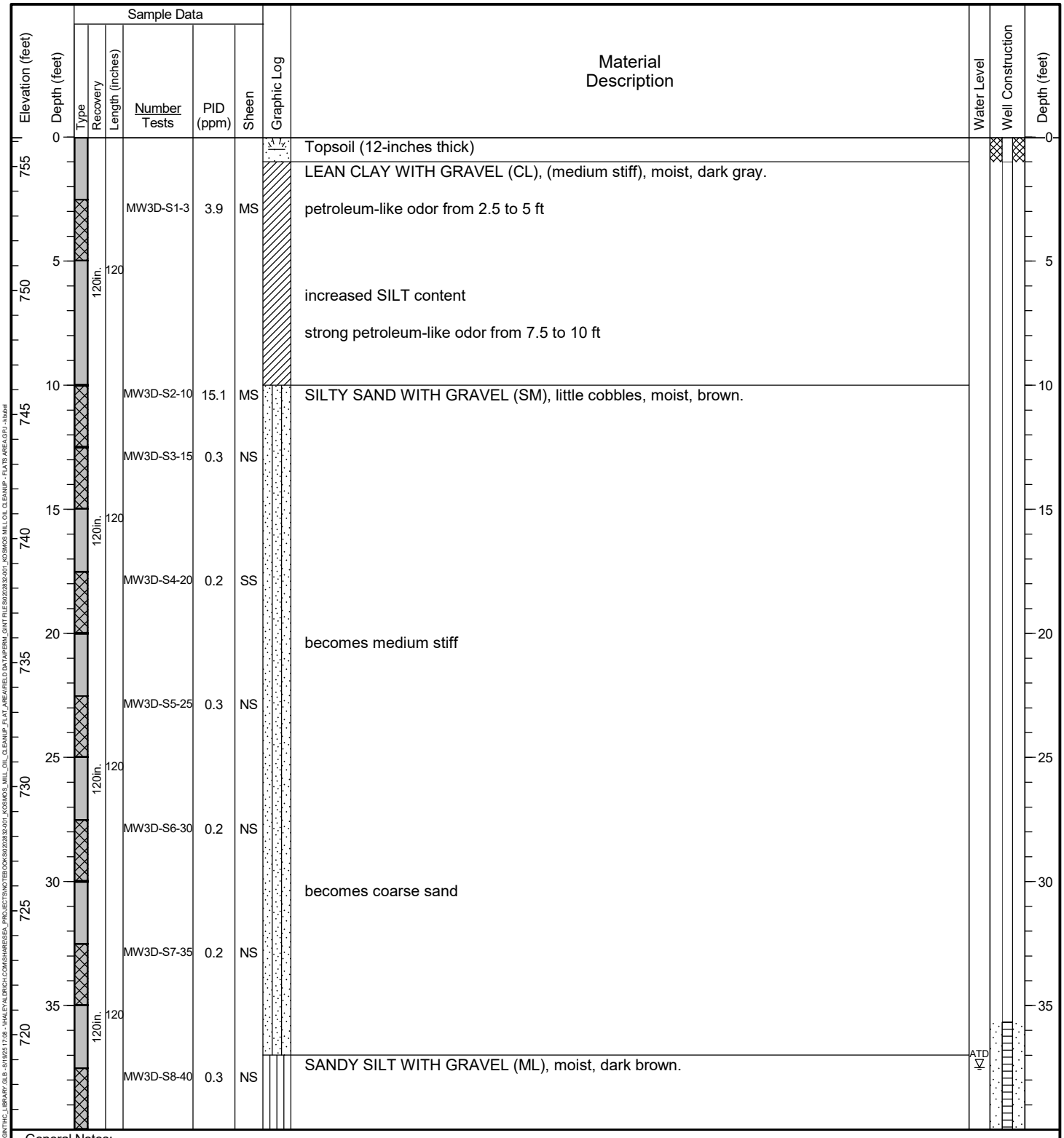
Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**MW-2S**

Figure **C-59**
Sheet **1 of 1**

HA PUSH PROBE - I:\HALEYALDRICH.COM\SHARESEA_DATA\GINTHC_LIBRARY GLB - 8/1/923 17:09 - I:\HALEYALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOKS\0202832-001_KOSMOS_MILL_OIL CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuttel

| | | | |
|---|---|---|---|
| Date Started: 10/27/2022 | Date Completed: 10/27/2022 | Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon | |
| Logged by: Z. Stephens | Checked by: C. Orr | Rig Model/Type: TSi 150CC / Track-mounted drill rig | |
| Location: N: 427,152.35 E: 1,214,501.55 (WA State Plane N, NAD 83, ft.) | | Hole Diameter: 6 inches | Well Casing Diameter: OD: 8 inches |
| Ground Surface Elevation: 756.18 feet (Tacoma City Light (TCL) Datum) | | Total Depth: 60.0 feet | Depth to Groundwater: 37.5 feet |
| Comments: Well Tag ID: BNM508 | | | |




General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

| | | | |
|---|---|---|---|
| HALEY ALDRICH | Project: KOSMOS MILL OIL CLEANUP - FLATS AREA<br>Location: GLENOMA, WASHINGTON<br>Project No.: 0202832-001 | Sonic Core Log<br>**MW-3D** | Figure **C-60**<br>Sheet **1 of 2** |

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Date Started: 10/27/2022 Date Completed: 10/27/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: Z. Stephens Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,152.35 E: 1,214,501.55 (WA State Plane N, NAD 83, ft.) Hole Diameter: 6 inches Well Casing Diameter: OD: 8 inches

Ground Surface Elevation: 756.18 feet (Tacoma City Light (TCL) Datum) Total Depth: 60.0 feet Depth to Groundwater: 37.5 feet

Comments: Well Tag ID: BNM508

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Well Construction | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 715 | 40 | | | | | | | | SILTY SAND WITH GRAVEL (SM), wet, brown, coarse sand. | | | 40 |
| | | | | | MW3D-S9-45 | 0.2 | NS | | | | | |
| 710 | 45 | | 120in. | 120 | | | | | | | | 45 |
| | | | | | MW3D-S10-50 | 0.2 | NS | | | | | |
| 705 | 50 | | | | | | | | grades to with cobble | | | 50 |
| | | | | | MW3D-S11-55 | 0.3 | NS | | | | | |
| 700 | 55 | | 120in. | 120 | | | | | | | | 55 |
| | | | | | MW3D-S12-60 | 0.2 | NS | | | | | |
| 695 | 60 | | | | | | | | Bottom of Borehole at 60.0 feet. | | | 60 |
| 690 | 65 | | | | | | | | | | | 65 |
| 685 | 70 | | | | | | | | | | | 70 |
| 680 | 75 | | | | | | | | | | | 75 |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

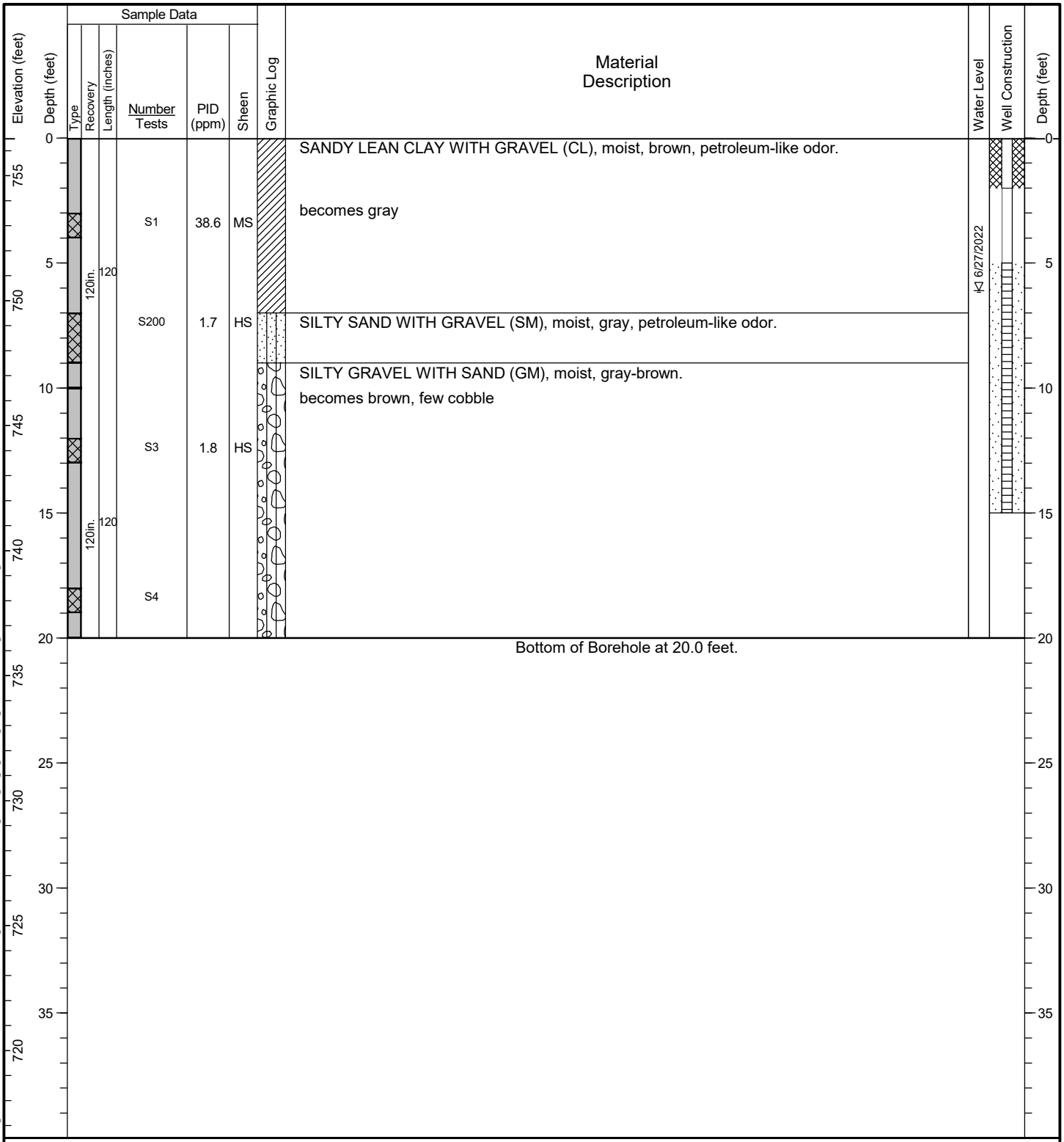
Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**MW-3D**

Figure **C-60**
Sheet **2 of 2**

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| | | | |
|---|---|---|---|
| Date Started: 06/27/2022 | Date Completed: 06/27/2022 | Contractor/Crew: Holt Services, Inc. / Marlen/David/Jager | |
| Logged by: A. Nakahara | Checked by: C. Orr | Rig Model/Type: TSi 150CC / Track-mounted drill rig | |
| Location: N: 427,161.37 E: 1,214,505.98 (WA State Plane N, NAD 83, ft.) | | Hole Diameter: 6 inches | Well Casing Diameter: OD: 2 inches |
| Ground Surface Elevation: 756.51 feet (Tacoma City Light (TCL) Datum) | | Total Depth: 20.0 feet | Depth to Groundwater: 6.1 feet |
| Comments: Well Tag ID: BNL576 | | | |




General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

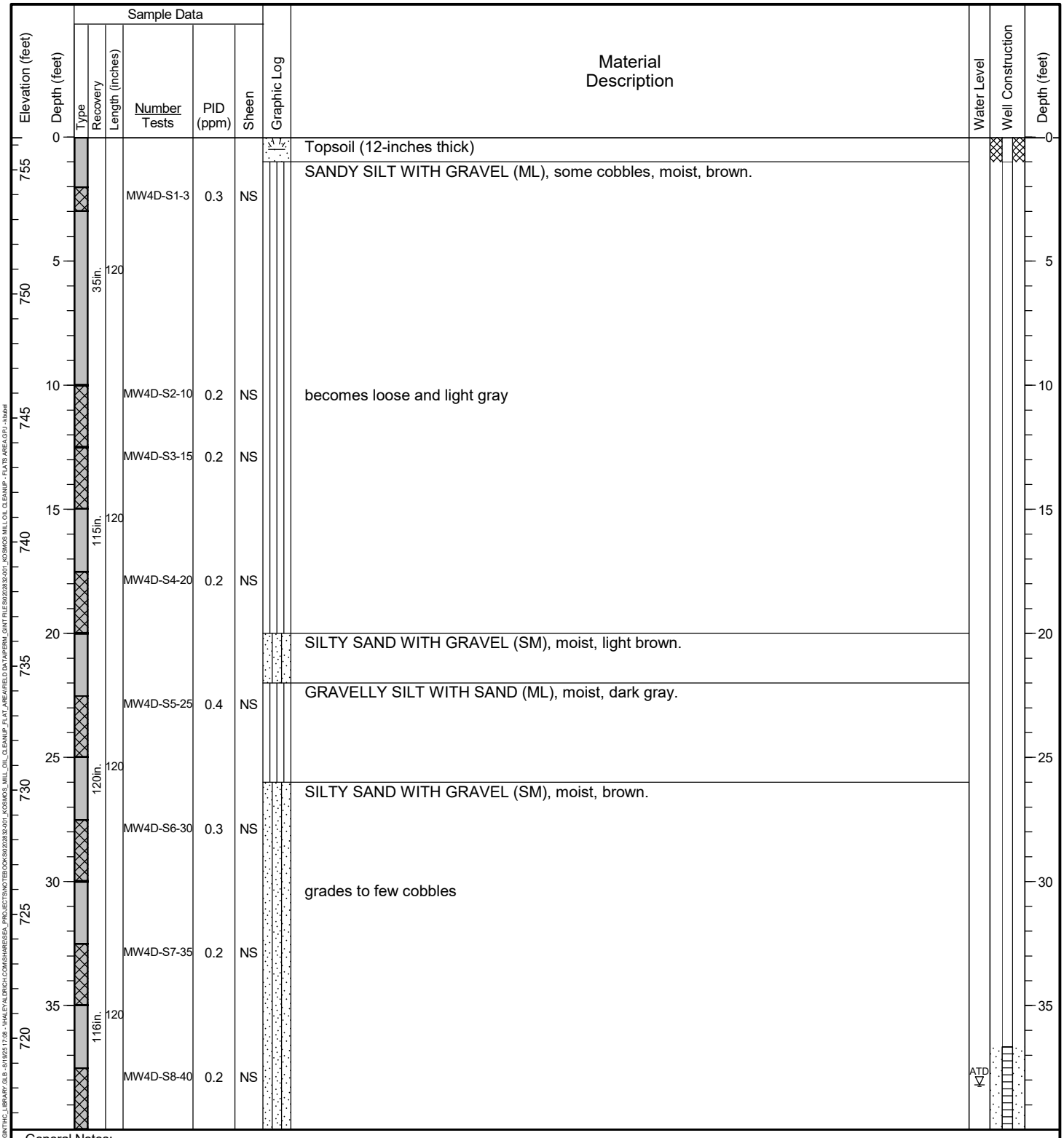
Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**MW-3S**

Figure **C-61**
Sheet **1 of 1**

HA PUSH PROBE - I:\HALEY ALDRICH.COM\SHARESEA_DATA\GINT\HC_LIBRARY.GLB 8/11/9231 17:09 I:\HALEY ALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\FIELD_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - k.hutch

| | | | |
|---|---|---|---|
| Date Started: 10/27/2022 | Date Completed: 10/28/2022 | Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon | |
| Logged by: Z. Stephens | Checked by: C. Orr | Rig Model/Type: TSi 150CC / Track-mounted drill rig | |
| Location: N: 427,078.30 E: 1,214,432.28 (WA State Plane N, NAD 83, ft.) | | Hole Diameter: 6 inches | Well Casing Diameter: OD: 8 inches |
| Ground Surface Elevation: 756.32 feet (Tacoma City Light (TCL) Datum) | | Total Depth: 60.0 feet | Depth to Groundwater: 38.2 feet |
| Comments: Well Tag ID: BNM509 | | | |




General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

| | | | |
|---|---|---|---|
| HALEY ALDRICH | Project: KOSMOS MILL OIL CLEANUP - FLATS AREA<br>Location: GLENOMA, WASHINGTON<br>Project No.: 0202832-001 | Sonic Core Log<br>**MW-4D** | Figure **C-62**<br>Sheet **1 of 2** |

HA PUSH PROBE - I:\HALEY ALDRICH.COM\SHARESEA_DATA\GINT\HC_LIBRARY GLB 8/1/923 17:09 - I:\HALEY ALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\PERM_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

Date Started: 10/27/2022 Date Completed: 10/28/2022 Contractor/Crew: Anderson Environmental Contracting, LLC / John, Adam, Brandon

Logged by: Z. Stephens Checked by: C. Orr Rig Model/Type: TSi 150CC / Track-mounted drill rig

Location: N: 427,078.30 E: 1,214,432.28 (WA State Plane N, NAD 83, ft.) Hole Diameter: 6 inches Well Casing Diameter: OD: 8 inches

Ground Surface Elevation: 756.32 feet (Tacoma City Light (TCL) Datum) Total Depth: 60.0 feet Depth to Groundwater: 38.2 feet

Comments: Well Tag ID: BNM509

| Elevation (feet) | Depth (feet) | Sample Data: Type | Recovery | Length (inches) | Number / Tests | PID (ppm) | Sheen | Graphic Log | Material Description | Water Level | Well Construction | Depth (feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 715 | 40 | | | | | | | | SANDY SILT WITH GRAVEL (ML), wet, brown. | | | 40 |
| | | | | | MW4D-S9-45 | 0.1 | NS | | | | | |
| 710 | 45 | | | | | | | | SILTY SAND WITH GRAVEL (SM), little cobbles, (loose), wet, brown-gray. | | | 45 |
| | | | | | MW4D-S10-50 | 0.1 | NS | | | | | |
| 705 | 50 | | | | | | | | | | | 50 |
| | | | | | MW4D-S11-55 | 0.2 | NS | | | | | |
| 700 | 55 | 96in. | 120 | | | | | | SANDY SILT WITH GRAVEL (ML), moist, brown-gray. | | | 55 |
| | | | | | | | | | no recovery | | | |
| 695 | 60 | | | | | | | | Bottom of Borehole at 60.0 feet. | | | 60 |
| 690 | 65 | | | | | | | | | | | 65 |
| 685 | 70 | | | | | | | | | | | 70 |
| 680 | 75 | | | | | | | | | | | 75 |

General Notes:

1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

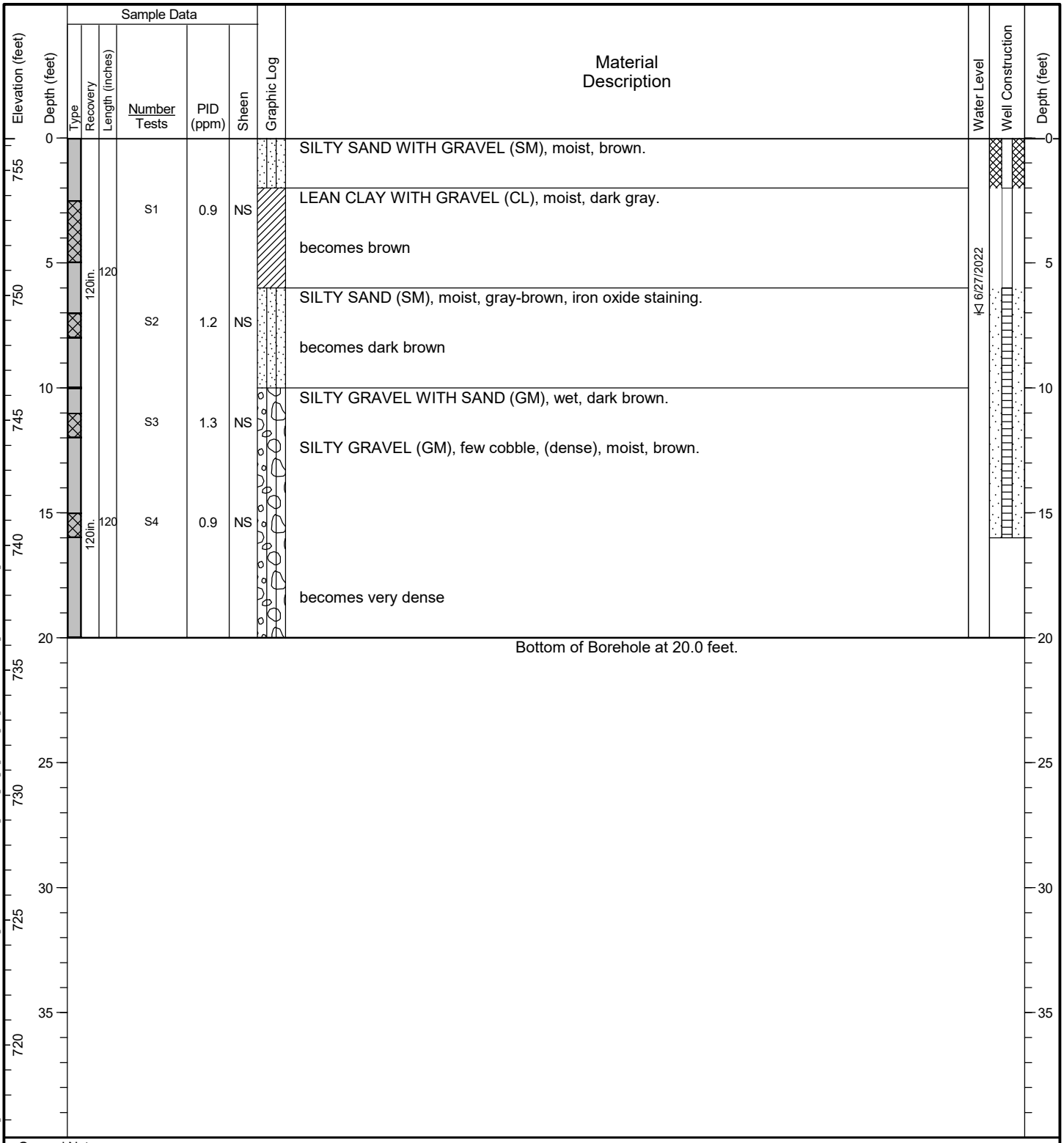
Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**MW-4D**

Figure **C-62**
Sheet **2 of 2**

HA PUSH PROBE - I:\HALEY ALDRICH.COM\SHARESEA_DATA\GINT\HC_LIBRARY.GLB 8/11/2021 17:09 I:\HALEY ALDRICH.COM\SHARESEA_PROJECTS\NOTEBOOK\0202832-001_KOSMOS_MILL_OIL_CLEANUP_FLAT_AREA\FIELD DATA\FIELD_GINT FILES\0202832-001_KOSMOS MILL OIL CLEANUP - FLATS AREA.GPJ - khuber

| | | | |
|---|---|---|---|
| Date Started: 06/27/2022 | Date Completed: 06/27/2022 | Contractor/Crew: Holt Services, Inc. / Marlen/David/Jager | |
| Logged by: A. Nakahara | Checked by: C. Orr | Rig Model/Type: TSi 150CC / Track-mounted drill rig | |
| Location: N: 427,085.34 E: 1,214,438.27 (WA State Plane N, NAD 83, ft.) | | Hole Diameter: 6 inches | Well Casing Diameter: OD: 2 inches |
| Ground Surface Elevation: 756.30 feet (Tacoma City Light (TCL) Datum) | | Total Depth: 20.0 feet | Depth to Groundwater: 7 feet |
| Comments: Well Tag ID: BNL575 | | | |




General Notes:
1. Refer to Figure C-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: KOSMOS MILL OIL CLEANUP - FLATS AREA
Location: GLENOMA, WASHINGTON
Project No.: 0202832-001

Sonic Core Log
**MW-4S**

Figure **C-63**
Sheet **1 of 1**

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# APPENDIX D
# Global Geophysics, LLC GPR and EM61 Report

Global Geophysics

P. O. Box 2229
Redmond, WA 98053
Tel: 425-890-4321
Fax: 360-805-0259

April 13, 2022 Our Ref.: 111-0328.000

Hart Crowser, a division of Haley & Aldrich
3131 Elliott Avenue | Suite 600
Seattle, WA 98121

Attention: Ms. Angie Goodwin

**RE: REPORT ON THE GEOPHYSICAL SURVEY AT FORMER KOSMOS MILL, LEWIS COUNTY, WA**

Dear Ms. Goodwin:

Global Geophysics conducted geophysical surveys on March 28 at the former Kosmos Mill, Lewis County, WA. The proposed objective of the geophysical investigation is to assist in locating potential buried USTs and old utilities.

## METHODOLOGY AND INSTRUMENTATION

EM61 and GPR were used for this study. The following paragraphs describe the methods and field procedures.

### Time Domain Electromagnetic (EM61)

The time-domain electromagnetic system is capable of detecting buried metal objects. It transmits a pulsed electromagnetic field into the ground, which induces eddy currents in buried metallic objects. These eddy currents generate secondary electromagnetic fields that are detected by the system. The time duration or decay rate, of the secondary EM field is related to the electrical conductivity characteristics of the buried object.

A four-channel (gate) high sensitivity metal detector, Geonics EM61 Mk2, was used to collect the data along the same traverses as the GPR. The low channel number (1) represents anomalies produced by shallow objects and the high channel number (4) represents anomalies produced by deeper objects. The subsurface depth range is from approximately 1 to 15 feet. The data was collected along both the NS and EW direction at a spacing of 5 ft. The data were stored digitally and downloaded after the survey for analysis and mapping.

### Ground Penetrating Radar

The GPR method uses electromagnetic pulses, emitted at regular intervals by an antenna to map subsurface features. The electromagnetic pulses are reflected where changes in

electrical properties of materials occur such as changes in lithology or where underground utilities are present. The reflected electromagnetic energy is received by an antenna, converted into an electrical signal, and recorded on the GPR unit. The data is recorded and viewed in real time on a graphical display that depicts a continuous profile or cross-section image of the subsurface directly beneath the path of the antenna.

The depth of penetration of the GPR signal varies according to antenna frequency and the conductivity of the subsurface material. The depth of subsurface penetration with GPR decreases with an increase in the frequency of the antenna and an increase in soil conductivity. Low frequency antennas (50 to 500 MHz) provide the best compromise between obtaining good subsurface penetration and resolution.

The data were collected in both NS and EW directions with a smallest spacing of 5 ft using Geophysical Survey Systems, Inc. (GSSI) SIR 3000 GPR system with antennas having a center frequency of 200 MHz. The data was digitally recorded for post processing.

**RESULTS**

The four channels of M61 data are contoured and presented in Figure 1A-1D. GPR profiles are presented in Figures 2-22.

Here are the findings:

1. EM Results
    a. In Area 1:
        i. There are high EM responses all along the southern edge of the site. This is most likely due to the concrete pad and metal frame along that edge. We cannot rule out the possibility of a UST of pipe under the concrete slab.
        ii. EM Anomaly 1-A is interpreted as a pipe running from (4, 52) to (28, 34)
        iii. EM Anomaly 1-B is a interpreted as pipe running from (106, 36) through (130, 71) to (146, 70).
        iv. EM Anomaly 1-C is interpreted as a pipe running from (119, 53) to (53, 54)
        v. EM Anomaly 1-D is interpreted as a northern extension from the high responses along the southern edge 34 ft wide east-west and 21 ft wide north-south centered at 95 ft west. This is a buried metal object or part of a concrete pad and metal frame.
        vi. EM Anomaly 1-E extends north from the south and east edges. It is 67 ft wide east-west and 40ft north from the south edge. This is a buried metal object or part of a concrete pad and metal frame.
    b. In Area 2:
        i. EM Anomaly 2-A is interpreted as a pipe running north-south from (80, 50) to (105, 59) to (106, 72) to (85, 100).

ii. EM Anomaly 2-B is interpreted as a pipe running north-south from (37, 66) to (34, 52) to (48, 0). It also includes what seems to be a branch starting at (63, 33) meeting the other line at (48, 0).
iii. EM Anomaly 2-C is interpreted as a pipe running from (19, 35) to (6, 3)
iv. EM Anomaly 2-D is interpreted as a buried metal object that is approximately 13 ft x 8 ft at (63, 33).
v. EM Anomaly 2-E is interpreted as a buried metal object that is approximately 13 ft x 10 ft at (106, 15).
vi. EM Anomaly 2-F is interpreted as a buried metal object that is approximately 10 ft x 10 ft at (32, 81).
vii. EM Anomaly 2-G is interpreted as a buried metal object that is approximately 10 ft x 13 ft at (36, 64).
viii. EM Anomaly 2-H is interpreted as a buried metal object that is approximately 14 ft x 9 ft at (4, 22)
ix. EM Anomaly 2-J is interpreted as a buried metal object that is approximately 8 ft x 6 ft at (56, 17).

c. In Area 3:
i. EM Anomaly 3-A is interpreted as a pipe running east-west from (300, 30) to (205, 28) to (156, 30) to (123, 38) to (78, 50) to (8, 55).
ii. EM Anomaly 3-B is interpreted as a pipe running east-west from (223, 10) to (198, 15) to (199, 10) to (43, 9) to (0, 4).
iii. EM Anomaly 3-C is interpreted as a pipe running east-west from (275, 48) to (240, 50) to (191, 66) to (156, 70) to (144, 62) to (113, 60).
iv. EM Anomaly 3-D is interpreted as a pipe running from (33, 7) to (39, 25) to (59, 50) to (83, 71).
v. EM Anomaly 3-E is interpreted as a buried metal object that is approximately 38 ft northwest-southeast and 22 ft southwest-northeast centered at
(245, 24).
vi. EM Anomaly 3-F is interpreted as a buried metal object that is approximately 26 ft northwest-southeast and 12 ft southwest-northeast centered at (63, 60).

2. GPR Results
a. In Area 1:
i. GPR anomaly 1-A is a linear GPR anomaly running east-west from (154, 45) to (130, 53) to (120, 50) to (90, 52) to (80, 52) to (70, 56).
ii. GPR anomaly 1-B is a linear GPR anomaly running east-west from (120, 50) to (90, 53) to (80, 51) to (70, 54).
iii. GPR anomaly 1-C is a linear GPR anomaly running north-south from (128, 70) to (124, 65) to (126, 50) to (130, 45).
iv. GPR anomaly 1-D is a linear GPR anomaly running north-south from (119, 45) to (118, 55) to (121, 60).
v. GPR anomaly 1-E is a linear GPR anomaly running north-south from (110, 45) to (100, 55).

vi. GPR anomaly 1-F is a linear GPR anomaly running north-south from (15, 60) to (12, 55) to (20, 40) to (19, 30) to (26, 14) to (29, 10) to (29, 5).
vii. GPR anomaly 1-G is a linear GPR anomaly running east-west from (140, 38) to (123, 34) to (110, 33).
viii. GPR anomaly 1-H is a linear GPR anomaly running east-west from (150, 33) to (130, 31) to (110, 29) to (100, 28) to (90, 31).
ix. GPR anomaly 1-J is a linear GPR anomaly running east-west from (115, 38) to (109, 36) to (90, 37).
x. GPR anomaly 1-K is a linear GPR anomaly running east-west from (150, 9) to (140, 7) to (100, 8) to (90, 10) to (67, 10) to (50, 10) to (40, 9) to (15, 8) to (0, 10).
xi. GPR anomaly 1-L is a linear GPR anomaly running north-south from (91, 34) to (93, 29) to (89, 25) to (92, 20) to (93, 16).
xii. GPR anomaly 1-M is a linear GPR anomaly running east-west from (90, 26) to (70, 26) to (60, 24) to (50, 25).
xiii. GPR anomaly 1-N is a suspected old excavation that is 15 ft x 15 ft at (17, 24).

b. In Area 2:
i. GPR anomaly 2-A is a linear GPR anomaly running north-south from (93, 95) to (86, 80) to (83, 70) to (81, 60) to (77, 30) to (78, 5) to (72, 0).
ii. GPR anomaly 2-B is a linear GPR anomaly running north-south from (16, 100) to (17, 90) to (29, 80) to (28, 70) to (30, 60) to (34, 54).
iii. GPR anomaly 2-C is a linear GPR anomaly running north-south turning at a sharp angle to run east-west from (105, 70) to (105, 54) to (100, 55) to (90, 58).
iv. GPR anomaly 2-D is a linear GPR anomaly running east-west from (50, 51) to (40, 50).
v. GPR anomaly 2-E is a linear GPR anomaly running east-west from (90, 32) to (80, 32) to (70, 35) to (60, 35).
vi. GPR anomaly 2-F is a linear GPR anomaly running north-south from (5, 45) to (7, 40) to (0, 30).
vii. GPR anomaly 2-G is a linear GPR anomaly running east-west from (110, 13) to (100, 10) to (90, 12).
viii. GPR anomaly 2-H is a linear GPR anomaly running east-west from (40, 20) to (30, 25).
ix. GPR anomaly 2-J is a linear GPR anomaly running east-west from (30, 17) to (10, 17) to (0, 19).
x. GPR anomaly 2-K is a linear GPR anomaly running east-west from (30, 3) to (20, 5)
xi. GPR anomaly 2-L is a linear GPR anomaly running north-south from (36, 45) to (40, 34) to (27, 25) to (23, 15) to (20, 10) to (21, 5).

c. In Area 3:
i. GPR anomaly 3-A is a linear GPR anomaly running east-west from (290, 39) to (270, 38) to (260, 42) to (255, 42).

ii. GPR anomaly 3-B is a linear GPR anomaly running east-west from (280, 45) to (260, 48) to (240, 56) to (230, 54) to (210, 58). This feature is likely to be related to GPR anomaly 3-D.
iii. GPR anomaly 3-C is a linear GPR anomaly running north-south from (238, 60) to (238, 50) to (244, 30) to (244, 24) to (243, 20) to (243, 15). This is likely a pipe.
iv. GPR anomaly 3-D is a linear GPR anomaly running north-south from (211, 55) to (208, 60) to (197, 65). This is likely a continuation of GPR anomaly 3-B and GPR anomaly 3-E. It is likely a pipe.
v. GPR anomaly 3-E is a linear GPR anomaly running east-west from (180, 63) to (160, 55) to (145, 55). This may connect to GPR anomaly 3-G and GPR anomaly 3-D. It may be a pipe.
vi. GPR anomaly 3-F is a linear GPR anomaly running east-west from (160, 76) to (150, 78) to (145, 78).
vii. GPR anomaly 3-G is a linear GPR anomaly running north-south from (158, 65) to (160, 60) to (145, 50) to (125, 35). This may connect to GPR anomaly 3-E
viii. GPR anomaly 3-H is a linear GPR anomaly running east-west from (125, 70) to 110, 70).
ix. GPR anomaly 3-J is a linear GPR anomaly running east-west from (115, 56) to (110, 55) to (100, 60).
x. GPR anomaly 3-K is a linear GPR anomaly running east-west from (70, 56) to (60, 62) to (50, 60). This feature may be related to connect to GPR anomaly 3-L.
xi. GPR anomaly 3-L is a linear GPR anomaly running north-south from (61, 50) to (53, 55) to (53, 60) to (44, 65). This may connect to GPR anomaly 3-K.
xii. GPR anomaly 3-M is a linear GPR anomaly running north-south from (22, 80) to (20, 45) to (18, 31) to (17, 24) to (18, 10) to (20, 0). This is likely to be a pipe.
xiii. GPR anomaly 3-N is a linear GPR anomaly running east-west from (295, 31) to (290, 34) to (270, 35).
xiv. GPR anomaly 3-O is a linear GPR anomaly running north-south from (227, 34) to (226, 30) to (228, 24).
xv. GPR anomaly 3-P is a linear GPR anomaly running east-west from (300, 28) to (280, 29) to (220, 28) to (210, 26) to (200, 28) to (190, 26) to (160, 31) to (140, 34) to (130, 35) to (120, 40) to (110, 41) to (80, 50) to (70, 49) to (60, 49) to (50, 48) to (10, 57). This corresponds with EM anomaly 3-A, it is a pipe.
xvi. GPR anomaly 3-Q is a linear GPR anomaly running east-west from (65, 43) to (50, 41).
xvii. GPR anomaly 3-R is a linear GPR anomaly running east-west from (80, 30) to (70, 29) to (60, 31).
xviii. GPR anomaly 3-S is a linear GPR anomaly running east-west from (110, 14) to (90, 20) to (80, 20) to (60, 24) to (50, 22).

xix. GPR anomaly 3-T is a linear GPR anomaly running north-south from (47, 40) to (42, 35) to (29, 25).
xx. GPR anomaly 3-U is a linear GPR anomaly running east-west from (15, 41) to (10, 41) to (0, 36).
xxi. GPR anomaly 3-V is a linear GPR anomaly running east-west from (30, 34) to (20, 34) to (10, 31) to (0, 27).
xxii. GPR anomaly 3-W is a linear GPR anomaly running east-west from (300, 20) to (285, 20)
xxiii. GPR anomaly 3-X is a linear GPR anomaly running east-west from (300, 16) to (285, 16).
xxiv. GPR anomaly 3-Y is a linear GPR anomaly running east-west from (280, 19) to (270, 18) to (260, 20) to (240, 18) to (230, 20) to (220, 16) to (205, 20).
xxv. GPR anomaly 3-Z is a linear GPR anomaly running east-west from (60, 9) to (50, 6) to (20, 7) to (0, 2). This is likely a pipe.
xxvi. GPR anomaly 3-AA is a linear GPR anomaly running east-west from (230, 10) to (210, 5) to (190, 3).
xxvii. GPR anomaly 3-AB is a linear GPR anomaly running north-south from (163, 0) to (148, 15) to (148, 20).
xxviii. GPR anomaly 3-AC is a linear GPR anomaly running east-west from (180, 6) to (160, 6) to (140, 3) to (130, 5) to (120, 4) to (100, 6).
xxix. GPR anomaly 3-AD is a linear GPR anomaly running east-west from (123, 20) to (117, 15) to (82, 10) to (64, 5).
xxx. GPR anomaly 3-AE is a linear GPR anomaly running east-west from (55, 13) to (20, 9)
xxxi. GPR anomaly 3-AF is a linear GPR anomaly running north-south from (29, 10) to (24, 20).

**LIMITATIONS OF THE GEOPHYSICAL METHOD**

Global geophysics services are conducted in a manner consistent with the level of care and skill ordinarily exercised by other members of the geophysical community currently practicing under similar conditions subject to the time limits and financial and physical constraints applicable to the services. EM61 and GPR are remote sensing geophysical methods that may not detect all subsurface conditions due to the limitations of the methods, soil conditions, size of the features and their depths.

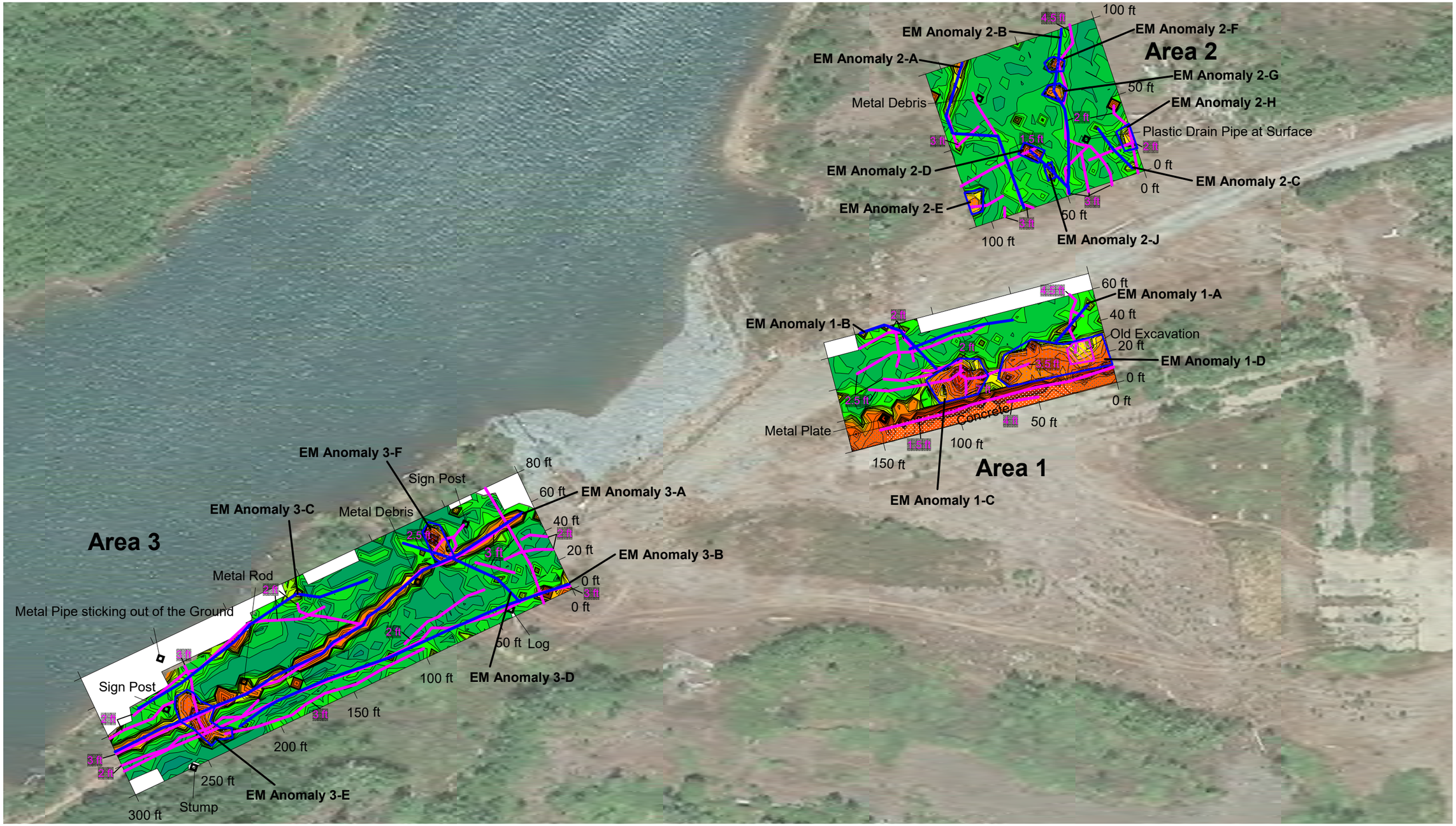
Sincerely,

**Global Geophysics**

Evangeline Johnston
Field Operation Manager



John Liu, Ph.D., R.G.
Principal Geophysicist




## Legend

- Surface Feature
- GPR Anomaly
- Depth of GPR Anomaly
- Evidence of an old excavation
- Linear EM Anomaly/ Pipe or Cable
- Discrete EM Anomaly

11500 mV/V
9500 mV/V
7000 mV/V
5000 mV/V
4000 mV/V
2000 mV/V
1000 mV/V
750 mV/V
687.5 mV/V
562.5 mV/V
500 mV/V
312.5 mV/V
218.75 mV/V
156.25 mV/V
62.5 mV/V

N

0 ft 60 ft 120 ft

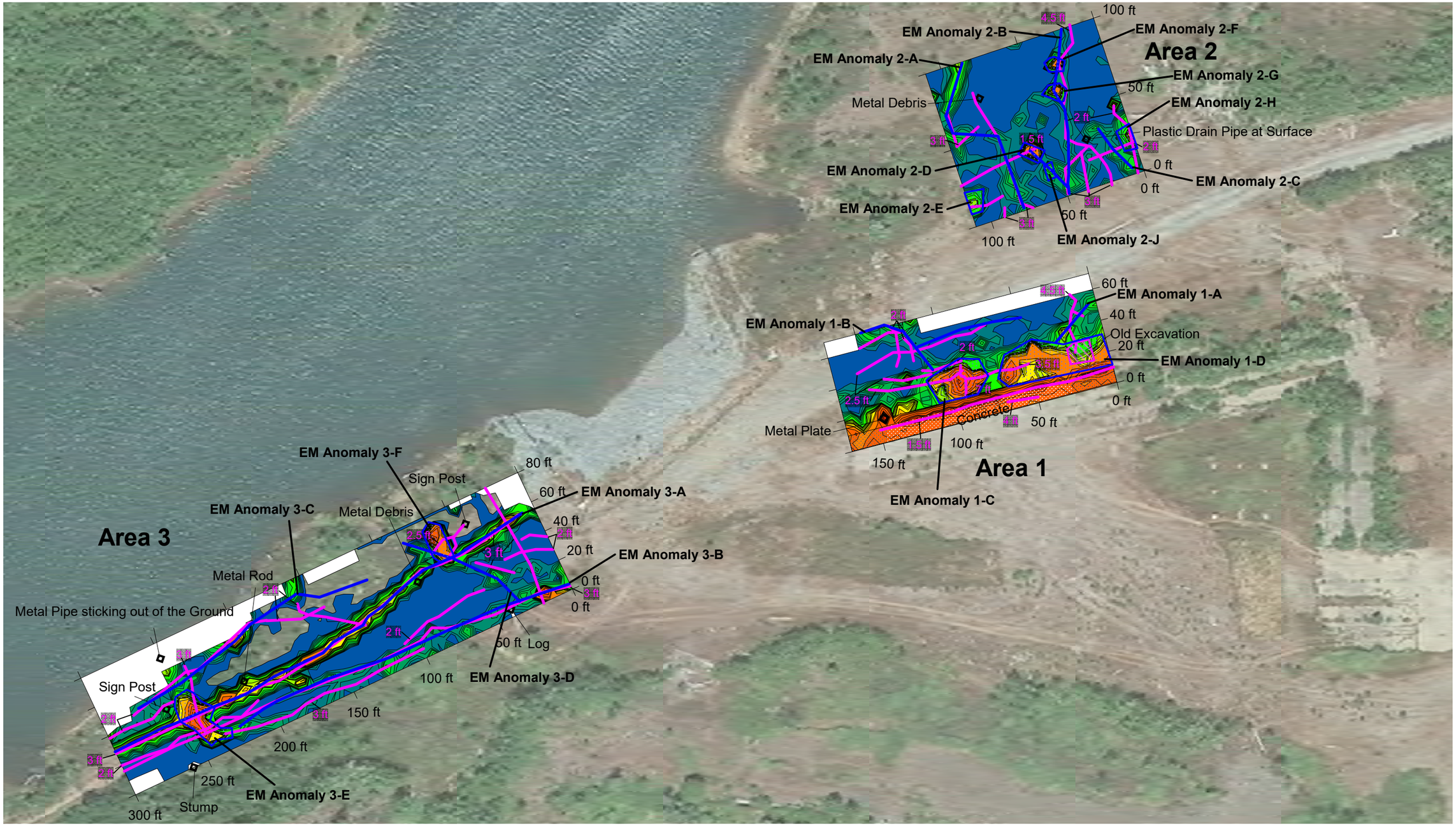
PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**EM Contour Map for Channel 1**

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

| | | | |
|---|---|---|---|
| Project #: 111-0328.000 | | FILE No. | |
| DESIGN | -- | SCALE AS SHOWN | REV. |
| CADD | AK | | |
| CHECK | JL | | |
| REVIEW | -- | | |

**FIGURE 1A**




## Legend

- Surface Feature
- GPR Anomaly
- Depth of GPR Anomaly
- Evidence of an old excavation
- Linear EM Anomaly/ Pipe or Cable
- Discrete EM Anomaly

11500 mV/V | 9500 mV/V | 7000 mV/V | 5000 mV/V | 4000 mV/V | 2000 mV/V | 1000 mV/V | 750 mV/V | 687.5 mV/V | 562.5 mV/V | 500 mV/V | 312.5 mV/V | 218.75 mV/V | 156.25 mV/V | 62.5 mV/V

N

0 ft 60 ft 120 ft

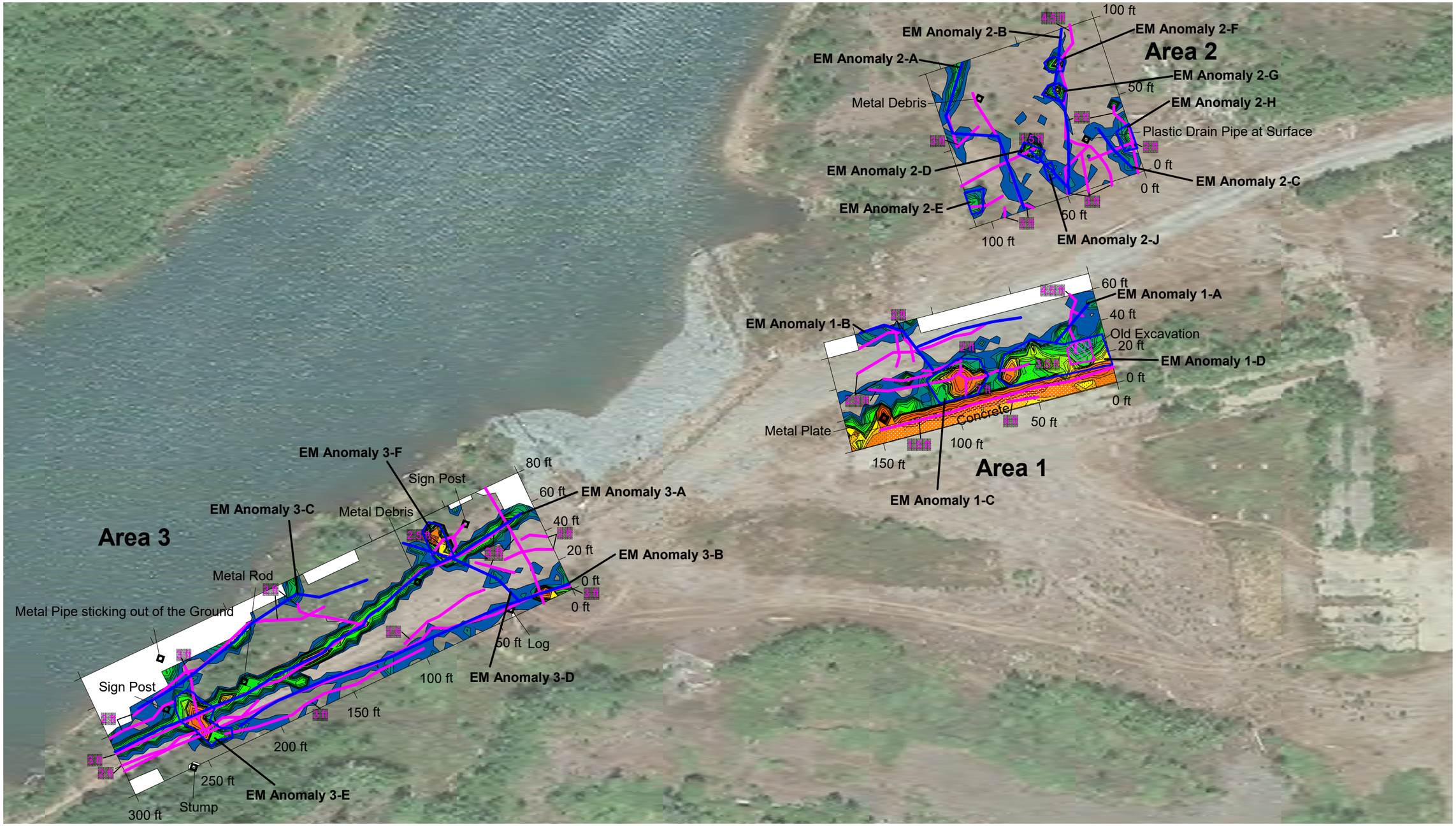
PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**EM Contour Map for Channel 2**

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

| | | | |
|---|---|---|---|
| Project #: 111-0328.000 | | FILE No. | |
| DESIGN | -- | SCALE AS SHOWN | REV. |
| CADD | AK | | |
| CHECK | JL | | |
| REVIEW | -- | | |

**FIGURE 1B**




## Legend

- Surface Feature
- GPR Anomaly
- Depth of GPR Anomaly
- Evidence of an old excavation
- Linear EM Anomaly/ Pipe or Cable
- Discrete EM Anomaly

11500 mV/V
9500 mV/V
7000 mV/V
5000 mV/V
4000 mV/V
2000 mV/V
1000 mV/V
750 mV/V
687.5 mV/V
562.5 mV/V
500 mV/V
312.5 mV/V
218.75 mV/V
156.25 mV/V
62.5 mV/V

N

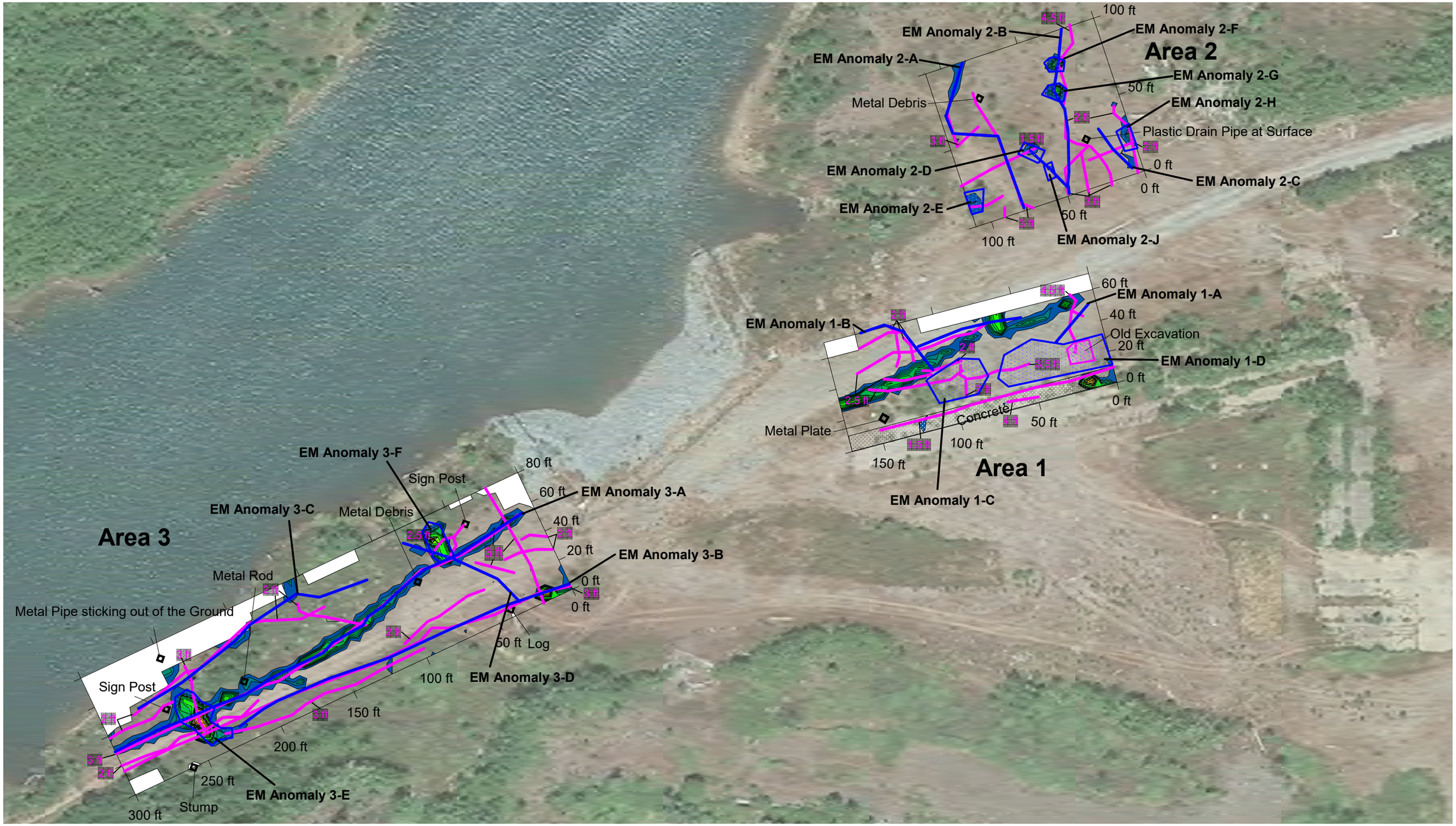
0 ft 60 ft 120 ft

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**EM Contour Map for Channel 3**

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

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|---|---|---|---|
| Project #: 111-0328.000 | | FILE No. | |
| DESIGN | -- | SCALE AS SHOWN | REV. |
| CADD | AK | | |
| CHECK | JL | **FIGURE 1C** | |
| REVIEW | -- | | |




## Legend

- Surface Feature
- GPR Anomaly
- Depth of GPR Anomaly
- Evidence of an old excavation
- Linear EM Anomaly/ Pipe or Cable
- Discrete EM Anomaly

11500 mV/V
9500 mV/V
7000 mV/V
5000 mV/V
4000 mV/V
2000 mV/V
1000 mV/V
750 mV/V
687.5 mV/V
562.5 mV/V
500 mV/V
312.5 mV/V
218.75 mV/V
156.25 mV/V
62.5 mV/V

N

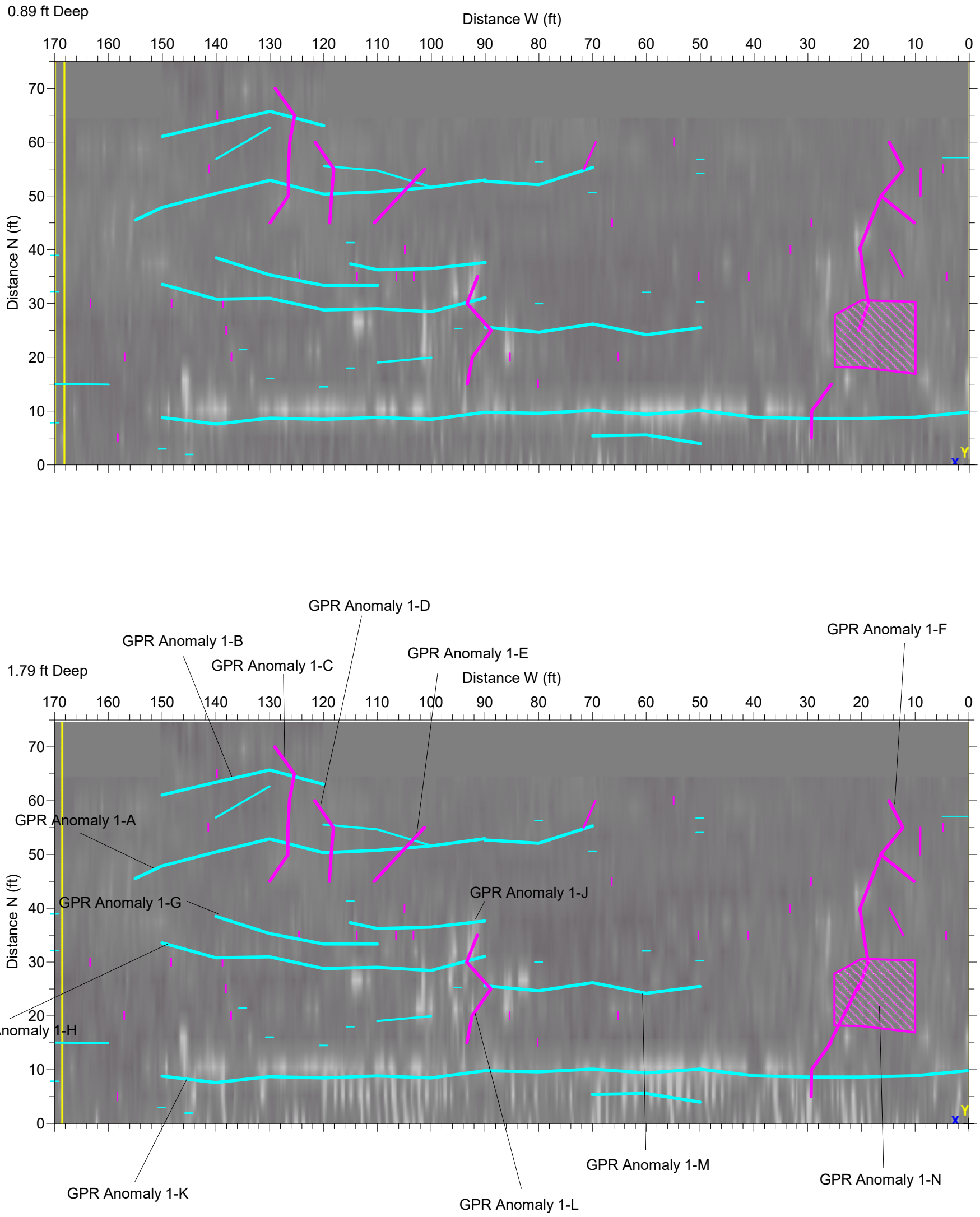
0 ft 60 ft 120 ft

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**EM Contour Map for Channel 4**

Global Geophysics
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|---|---|---|---|
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| DESIGN | -- | SCALE AS SHOWN | REV. |
| CADD | AK | | |
| CHECK | JL | **FIGURE 1D** | |
| REVIEW | -- | | |




## Legend

- GPR Anomaly running North-South
- GPR Anomaly running East-West
- Discrete GPR Anomaly running North-South
- Discrete GPR Anomaly running East-West
- Evidence of an old excavation

0 ft 20 ft 40 ft

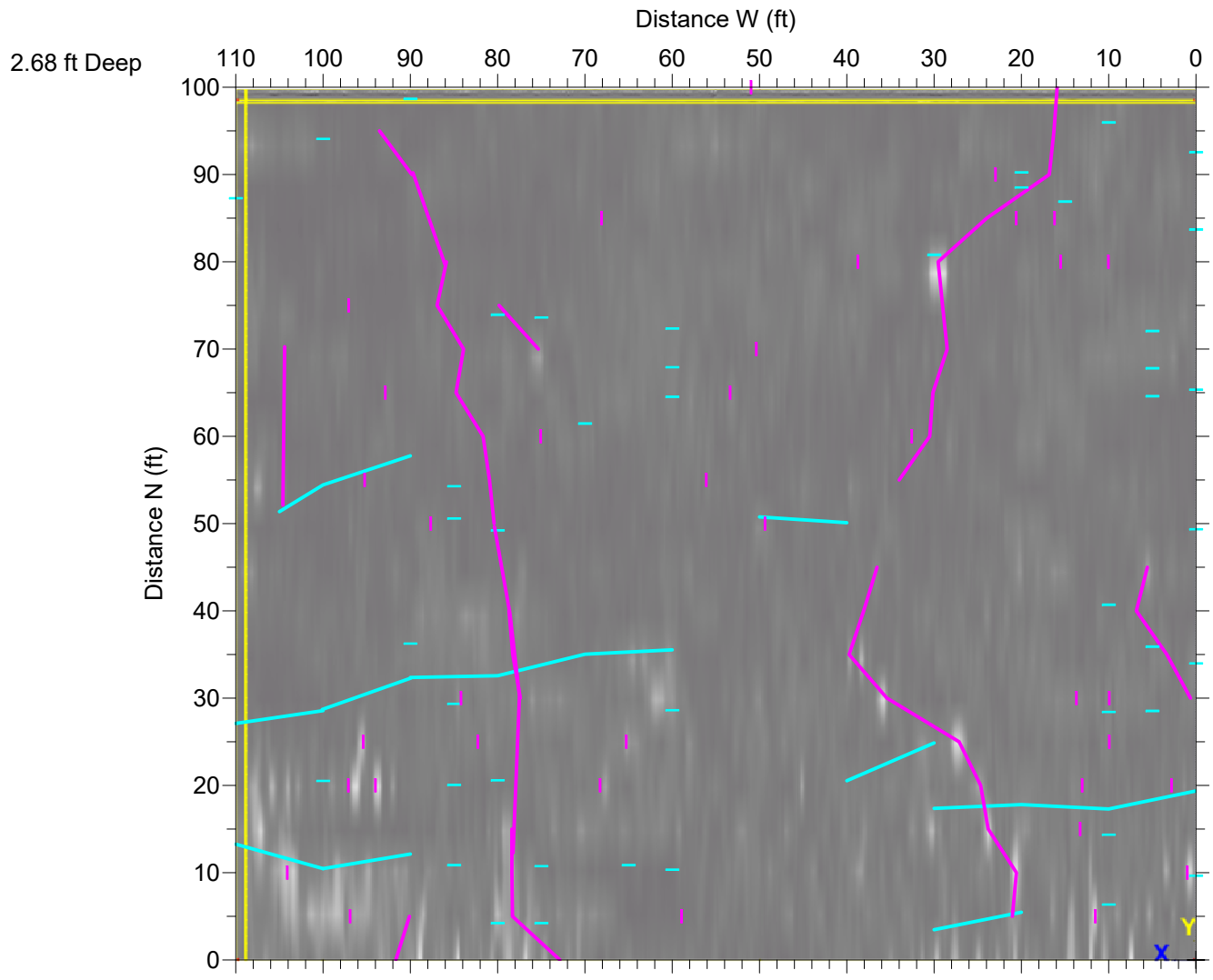
PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

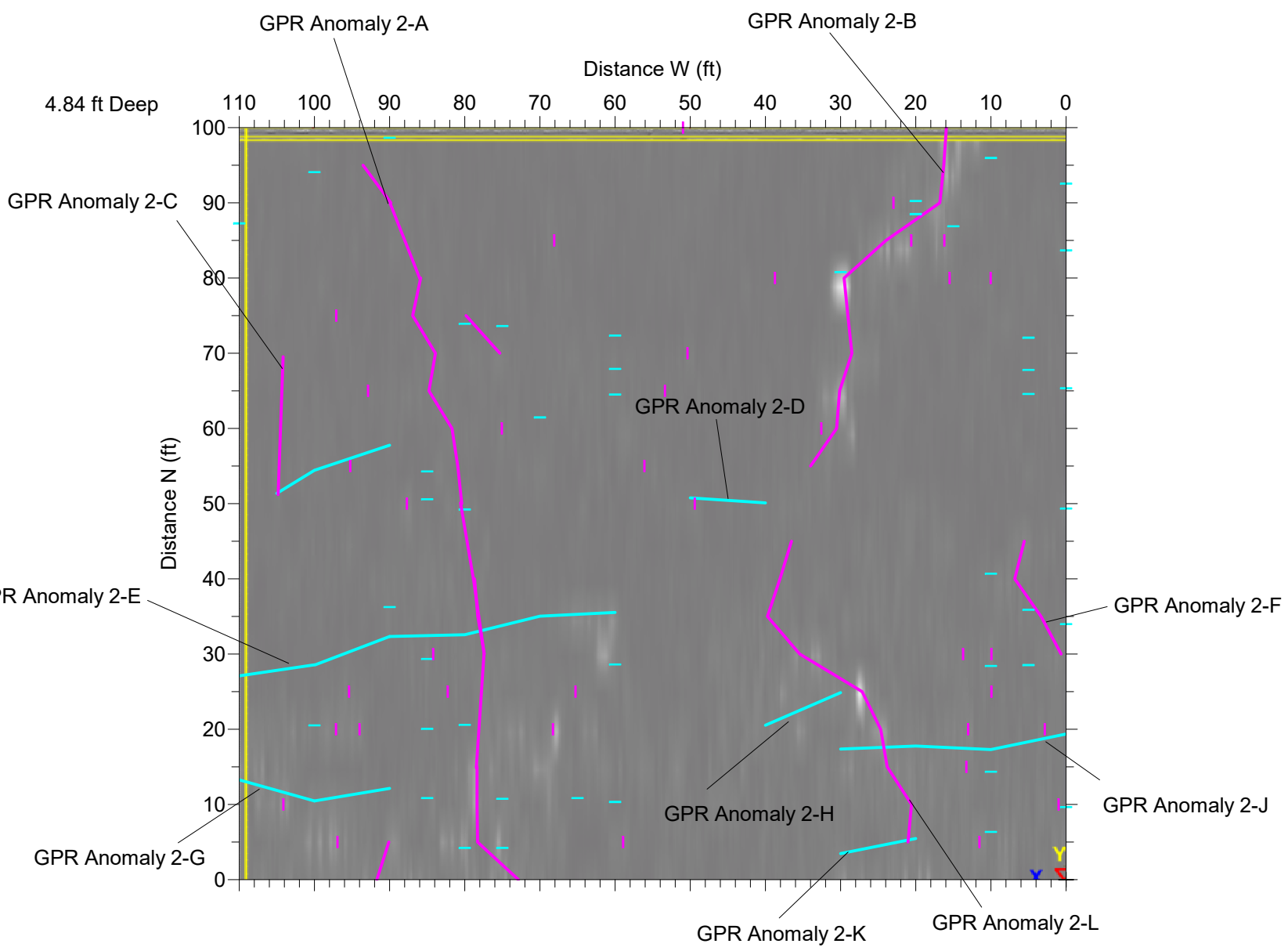
TITLE
**Area 1 3D GPR Slices**

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| Project #: 111-0328.000 | | | FILE No. | |
| DESIGN | -- | | SCALE AS SHOWN | REV. |
| CADD | AK | | | |
| CHECK | JL | | | |
| REVIEW | -- | | | |

**FIGURE 2**




## Legend

- GPR Anomaly running North-South
- GPR Anomaly running East-West
- Discrete GPR Anomaly running North-South
- Discrete GPR Anomaly running East-West

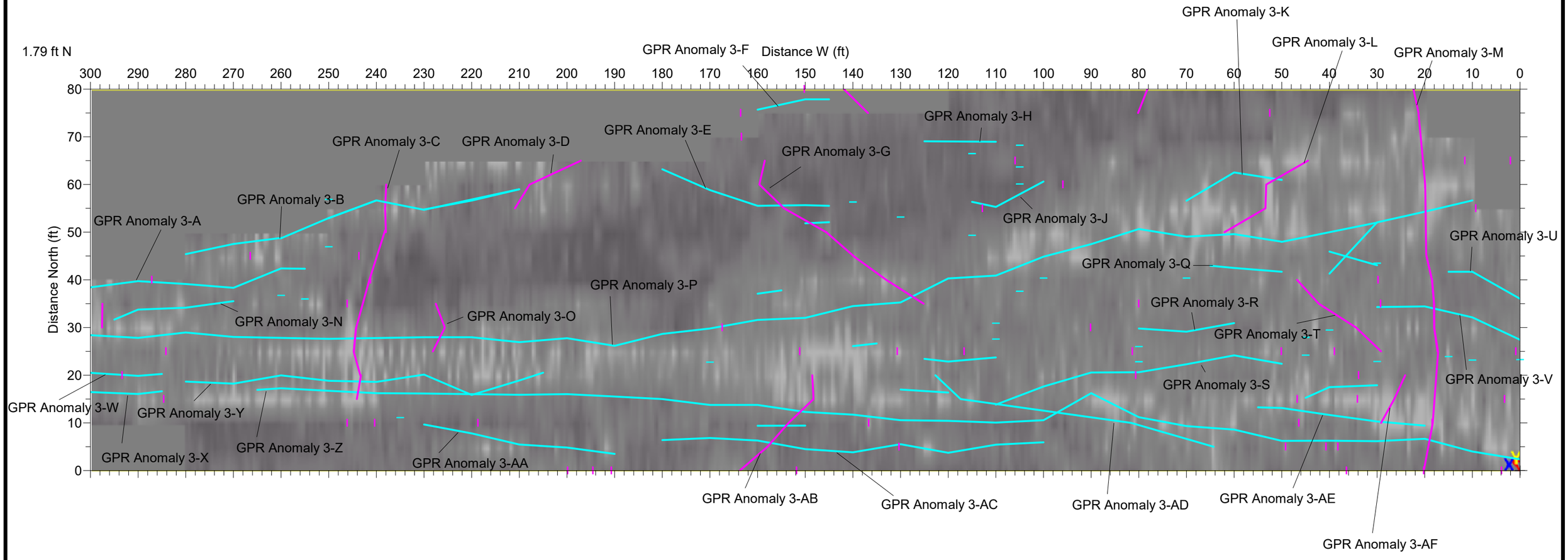
0 ft 20 ft 40 ft

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**Area 2 3D GPR Slices**

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|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. |
| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | |
| CHECK | JL | | **FIGURE 3** |
| REVIEW | -- | | |




## Legend

- GPR Anomaly running North-South
- GPR Anomaly running East-West
- Discrete GPR Anomaly running North-South
- Discrete GPR Anomaly running East-West

0 ft 20 ft 40 ft

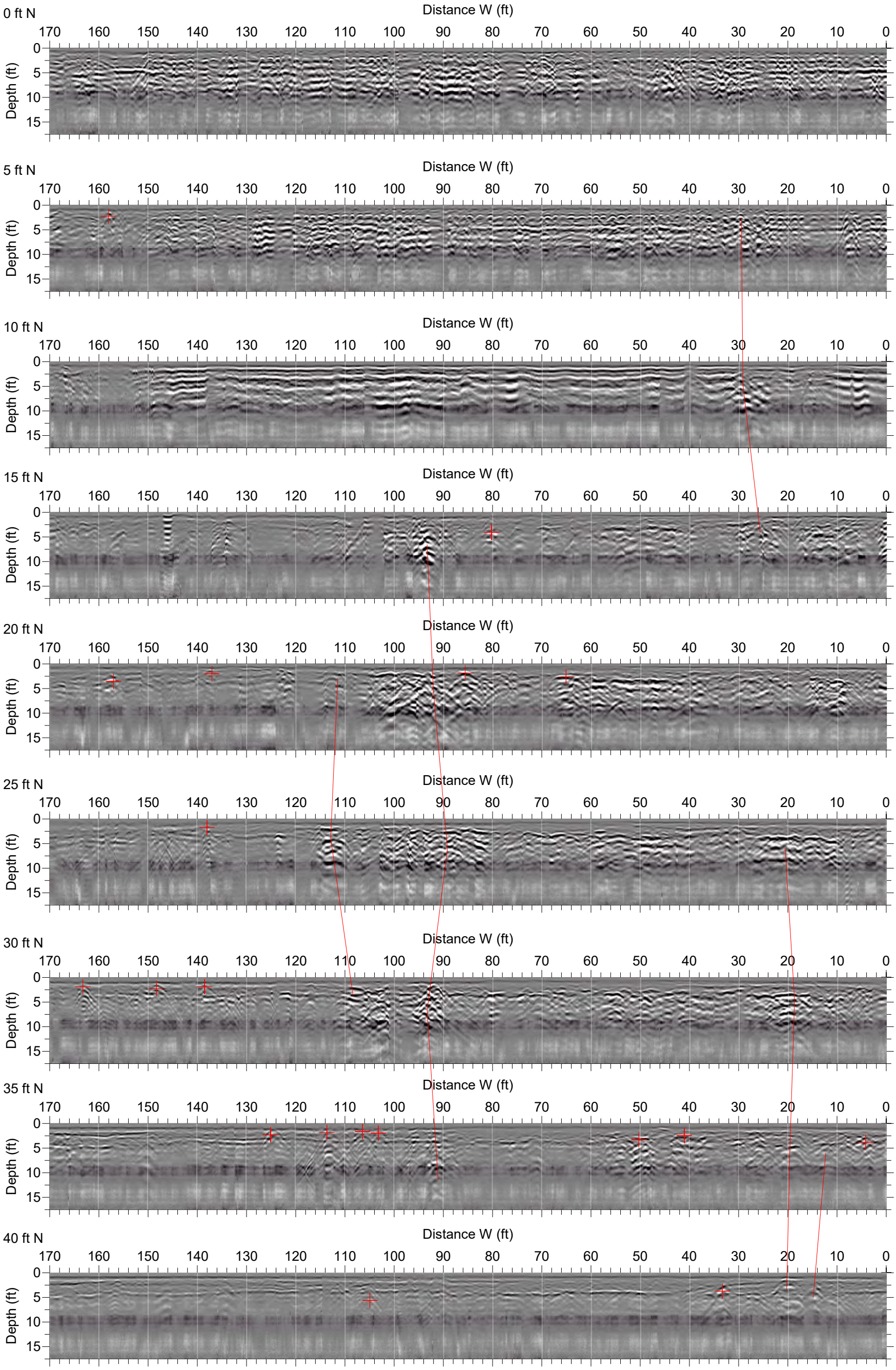
PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**Area 3 3D GPR Slice**

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P.O. Box 2229
Redmond, WA 98073-2229
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|---|---|---|---|
| Project #: 111-0328.000 | | FILE No. | |
| DESIGN | -- | SCALE AS SHOWN | REV. |
| CADD | AK | | |
| CHECK | JL | | |
| REVIEW | -- | | |

**FIGURE 4**




## Legend

- Discrete GPR Anomaly
- Continuous GPR Anomaly

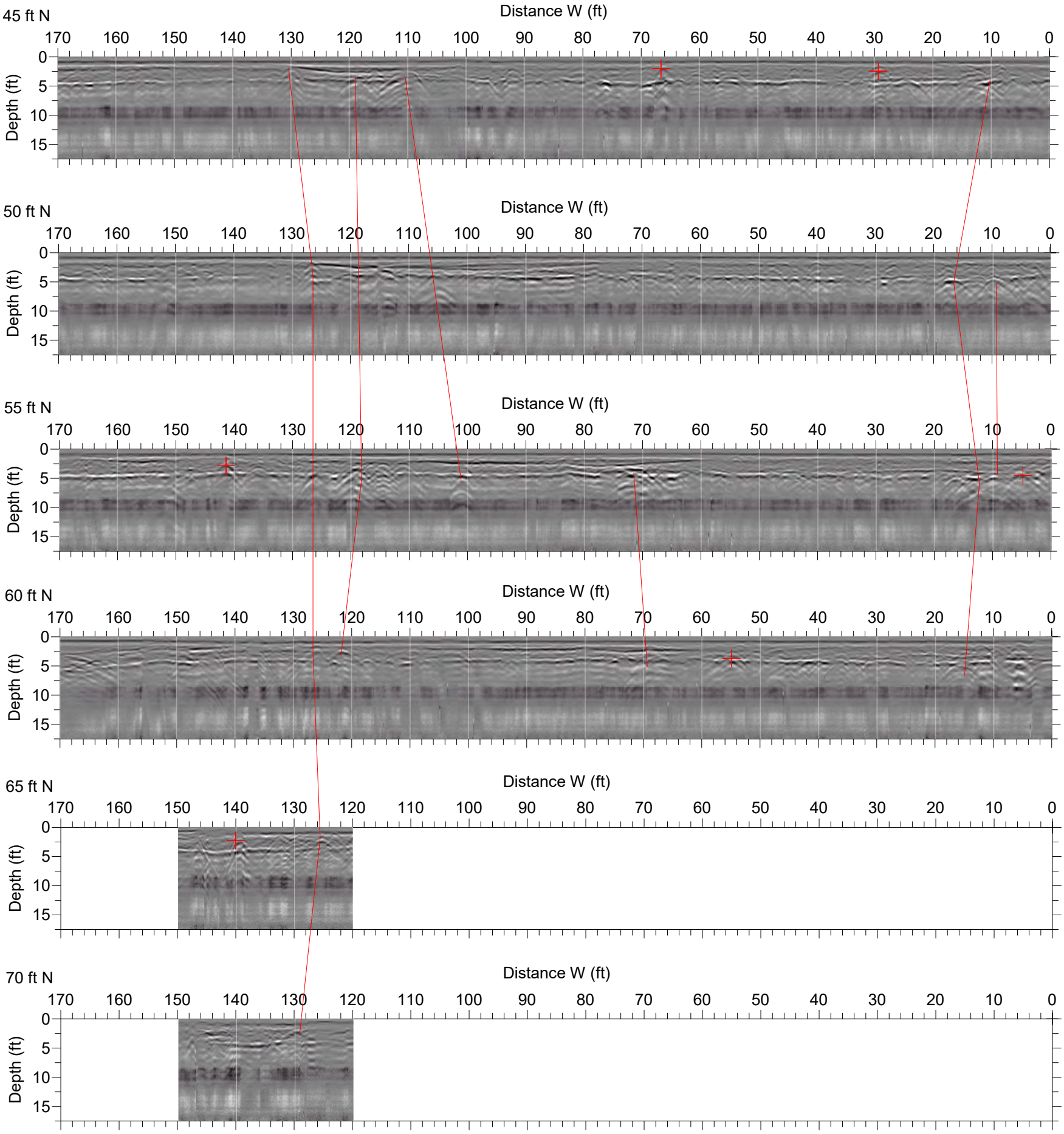
0 ft 20 ft 40 ft

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
# Area 1 EW GPR Profiles
# 0ft N - 40ft N

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|---|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. | |
| DESIGN | -- | | SCALE AS SHOWN | REV. |
| CADD | AK | | FIGURE 5 | |
| CHECK | JL | | | |
| REVIEW | -- | | | |




## Legend

Discrete GPR Anomaly

Continuous GPR Anomaly

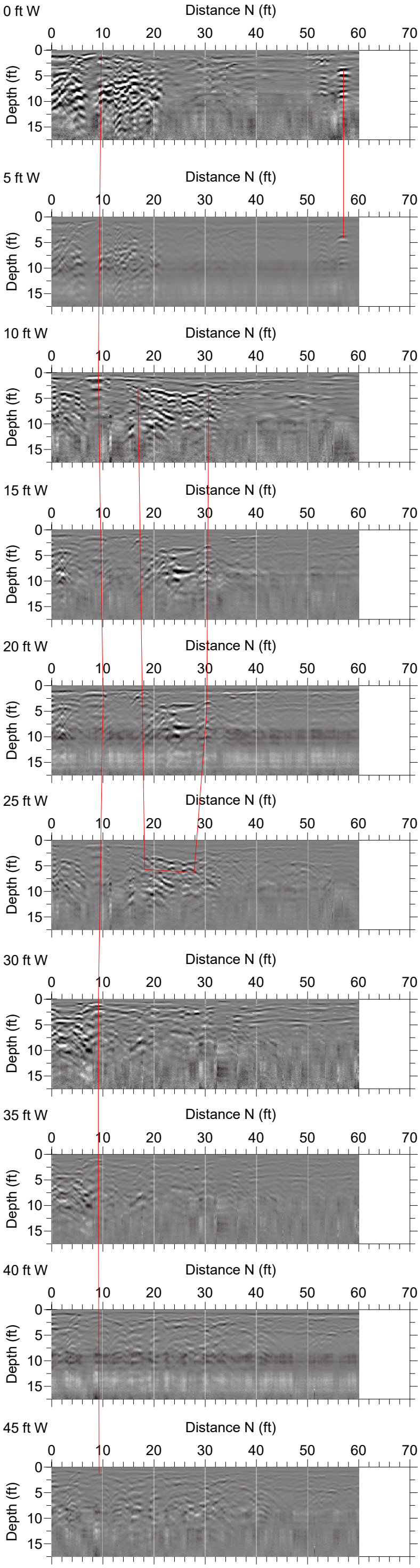
0 ft 20 ft 40 ft

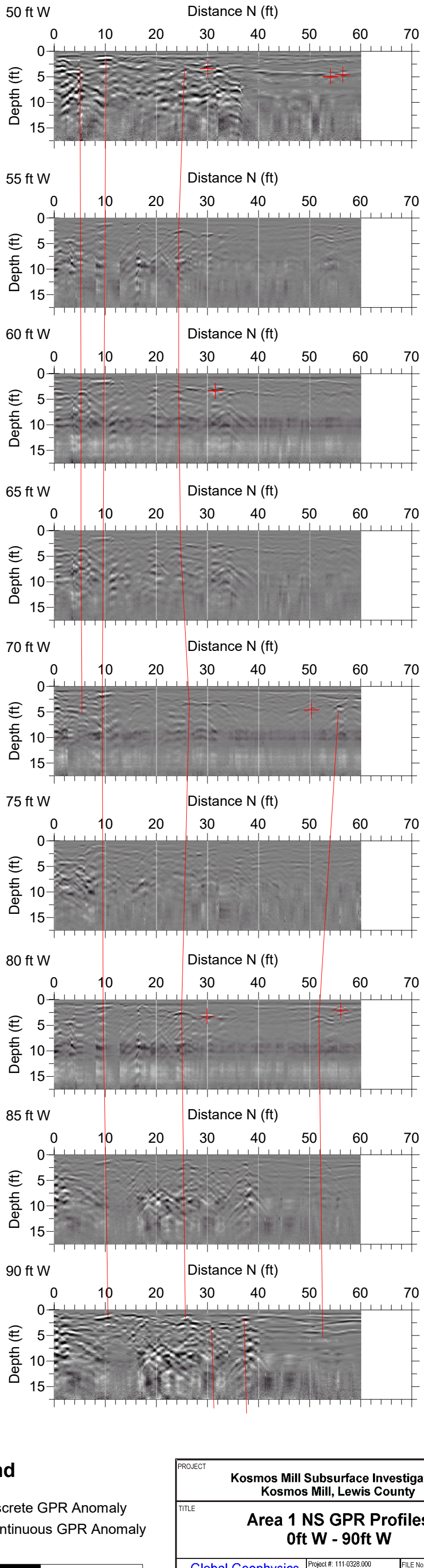
PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**Area 1 EW GPR Profiles**
**45ft N - 70 ft N**

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| | | | |
|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. |
| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | **FIGURE 6** |
| CHECK | JL | | |
| REVIEW | -- | | |




## Legend

Discrete GPR Anomaly

Continuous GPR Anomaly

0 ft 20 ft 40 ft

PROJECT

**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

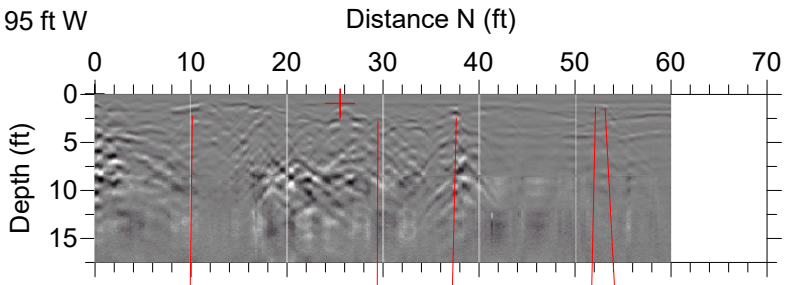
TITLE

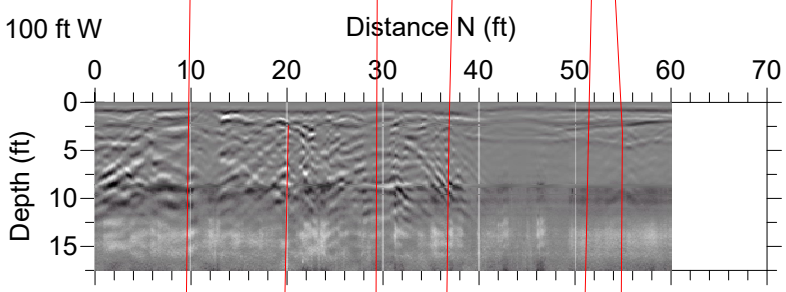
# Area 1 NS GPR Profiles
# 0ft W - 90ft W

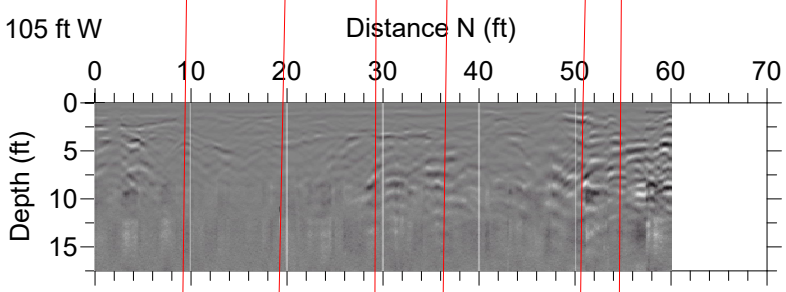

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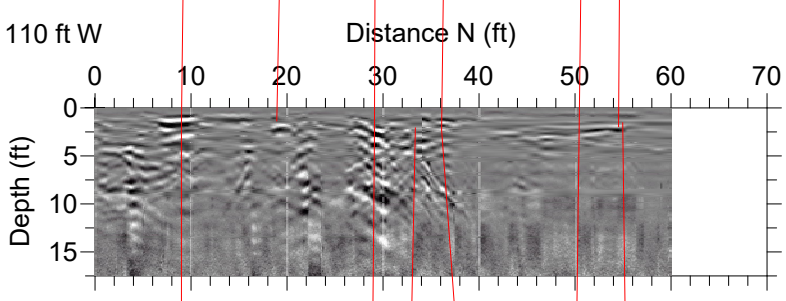

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|---|---|---|
| Project #: 111-0328.000 | | FILE No. |
| DESIGN | -- | SCALE AS SHOWN / REV. |
| CADD | AK | |
| CHECK | JL | |
| REVIEW | -- | |

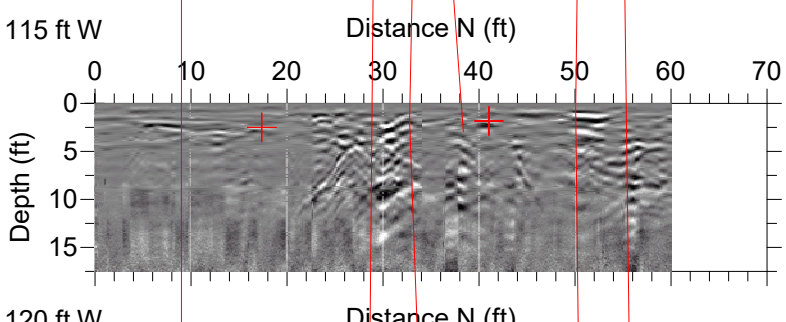
**FIGURE 7**

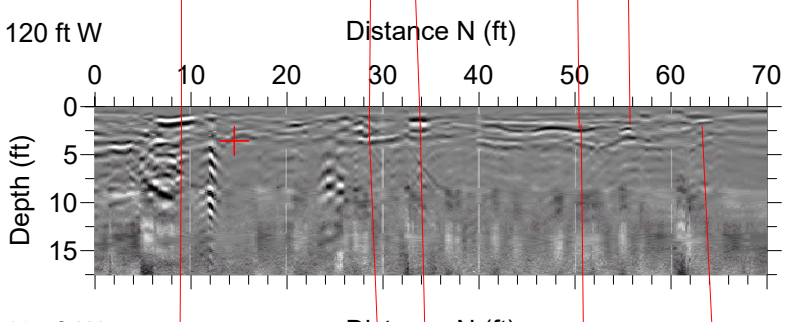


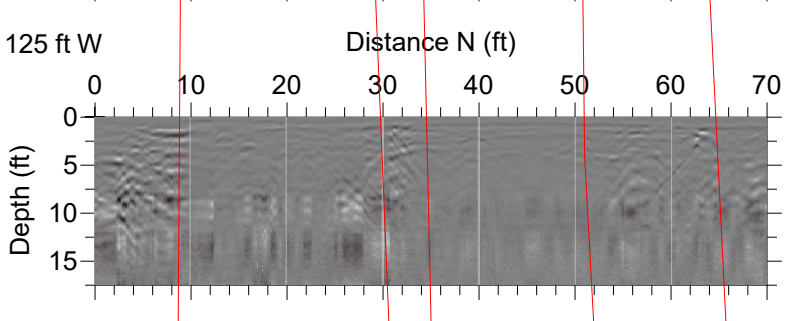



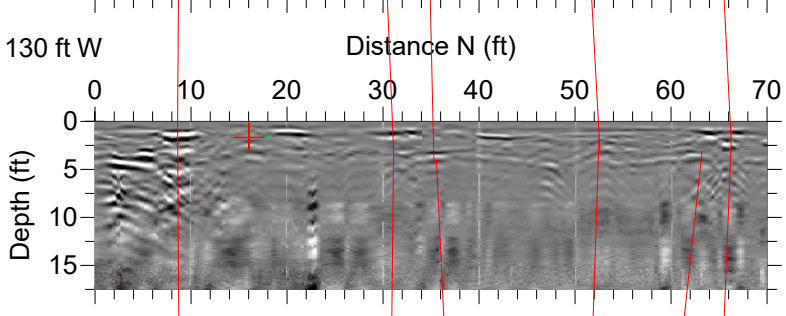



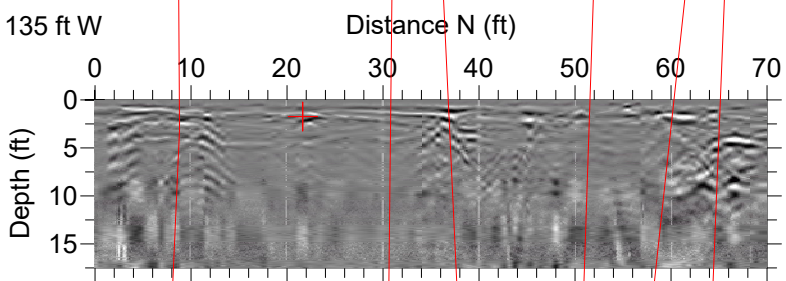



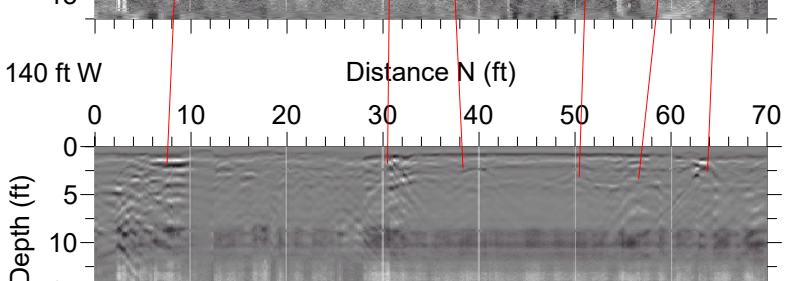



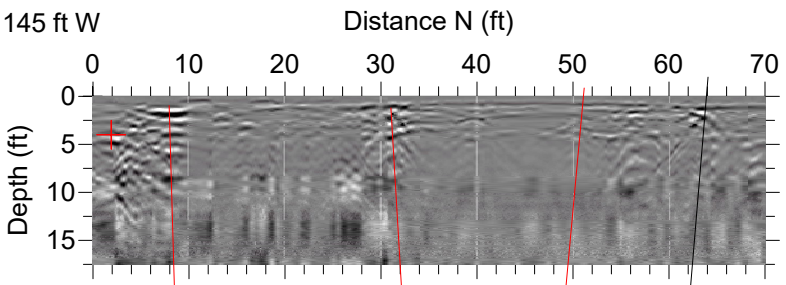



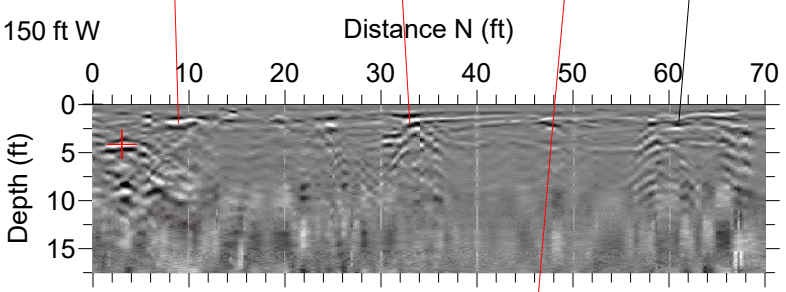



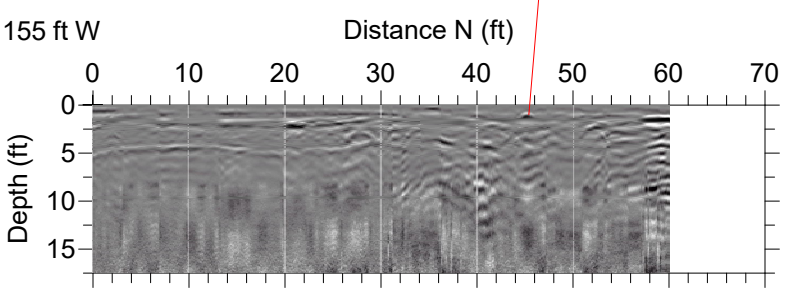



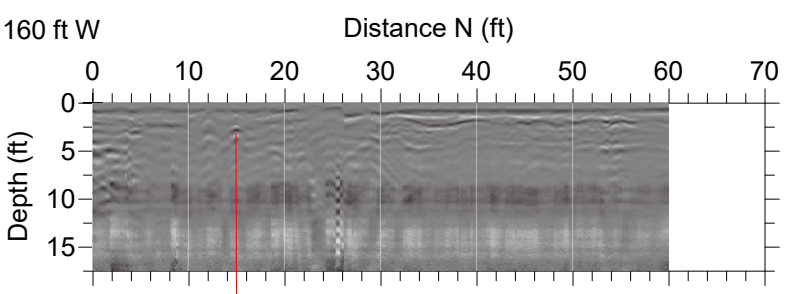



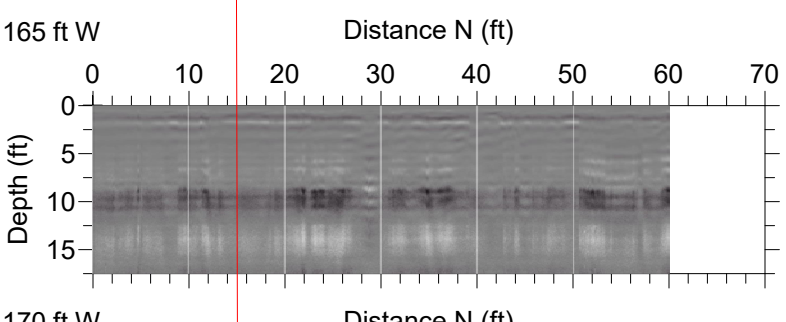



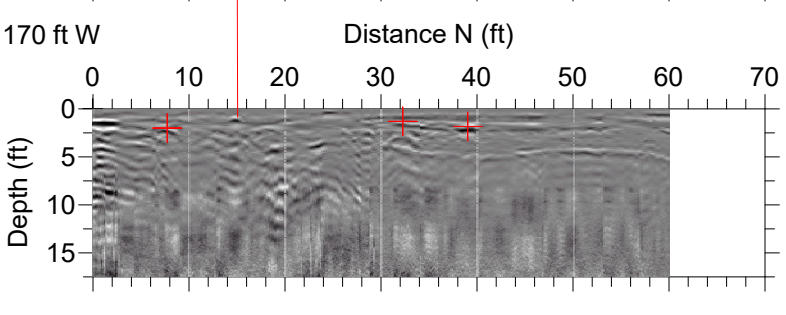




## Legend

Discrete GPR Anomaly

Continuous GPR Anomaly

0 ft 20 ft 40 ft

PROJECT

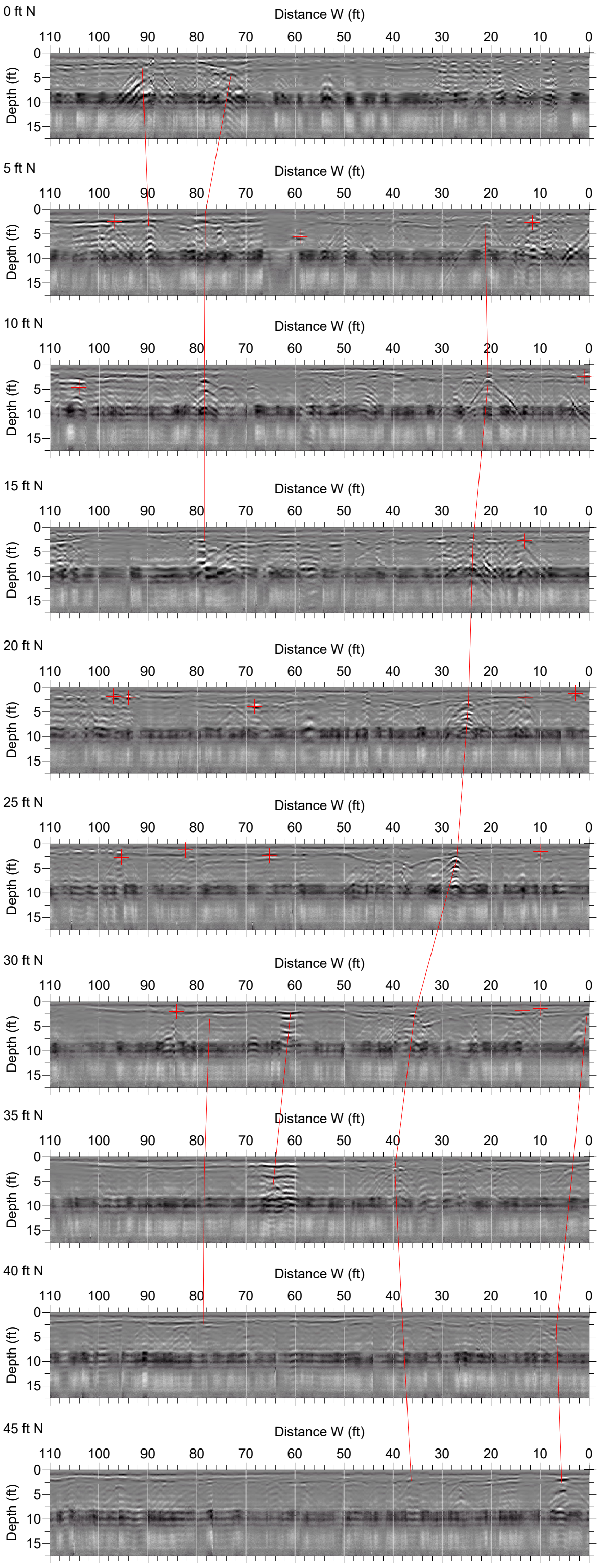
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE

**Area 1 NS GPR Profiles**
**95ft W - 170ft W**

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| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | |
| CHECK | JL | | **FIGURE 8** |
| REVIEW | -- | | |




## Legend

- Discrete GPR Anomaly
- Continuous GPR Anomaly

0 ft — 20 ft — 40 ft

PROJECT

**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

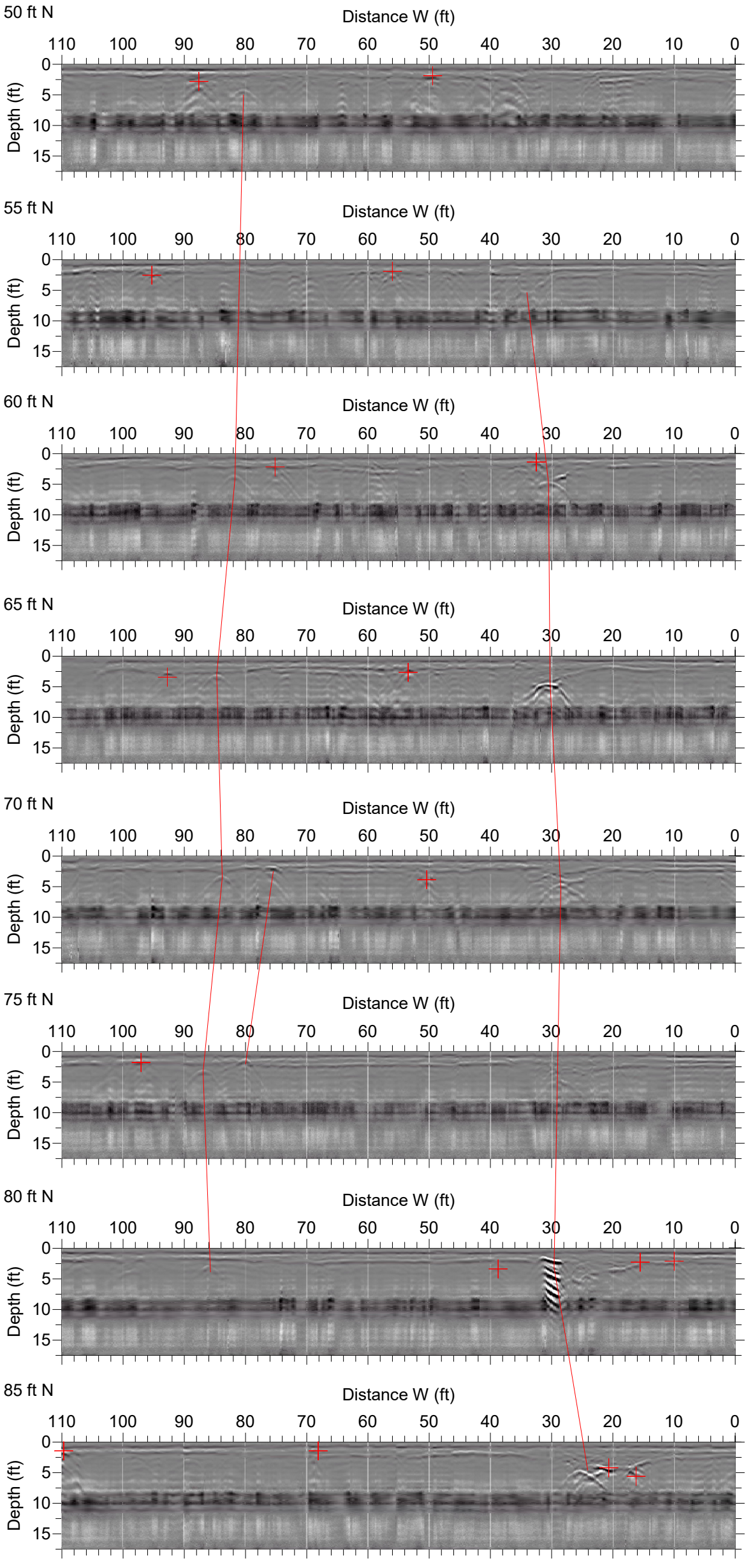
TITLE

# Area 2 EW GPR Profiles
# 0ft N - 45ft N

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| DESIGN | -- | | SCALE AS SHOWN | REV. |
| CADD | AK | | | |
| CHECK | JL | | | |
| REVIEW | -- | | | |

**FIGURE 9**




0 ft 20 ft 40 ft

## Legend

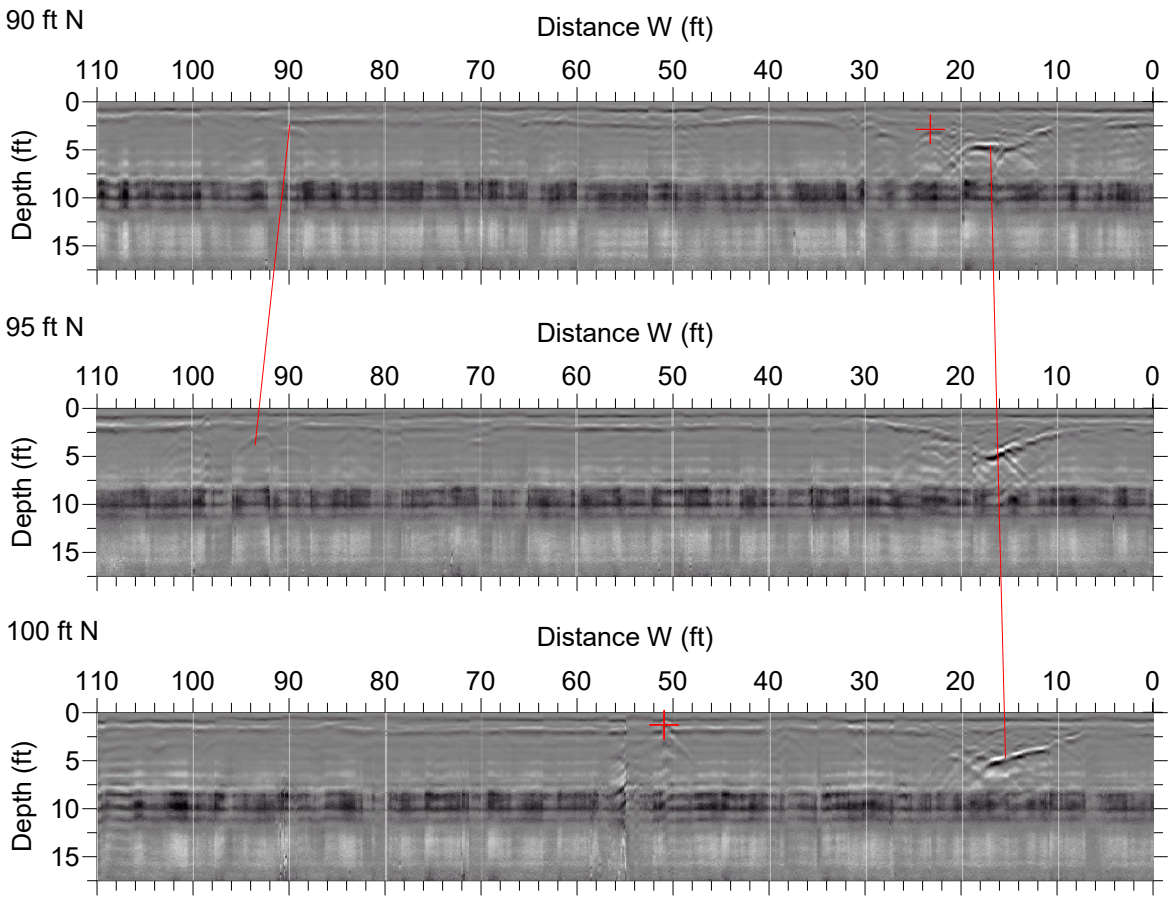
- Discrete GPR Anomaly
- Continuous GPR Anomaly

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**Area 2 EW GPR Profiles**
**50ft N - 85ft N**

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|---|---|---|---|
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| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | |
| CHECK | JL | | **FIGURE 10** |
| REVIEW | -- | | |




## Legend

- Discrete GPR Anomaly
- Continuous GPR Anomaly

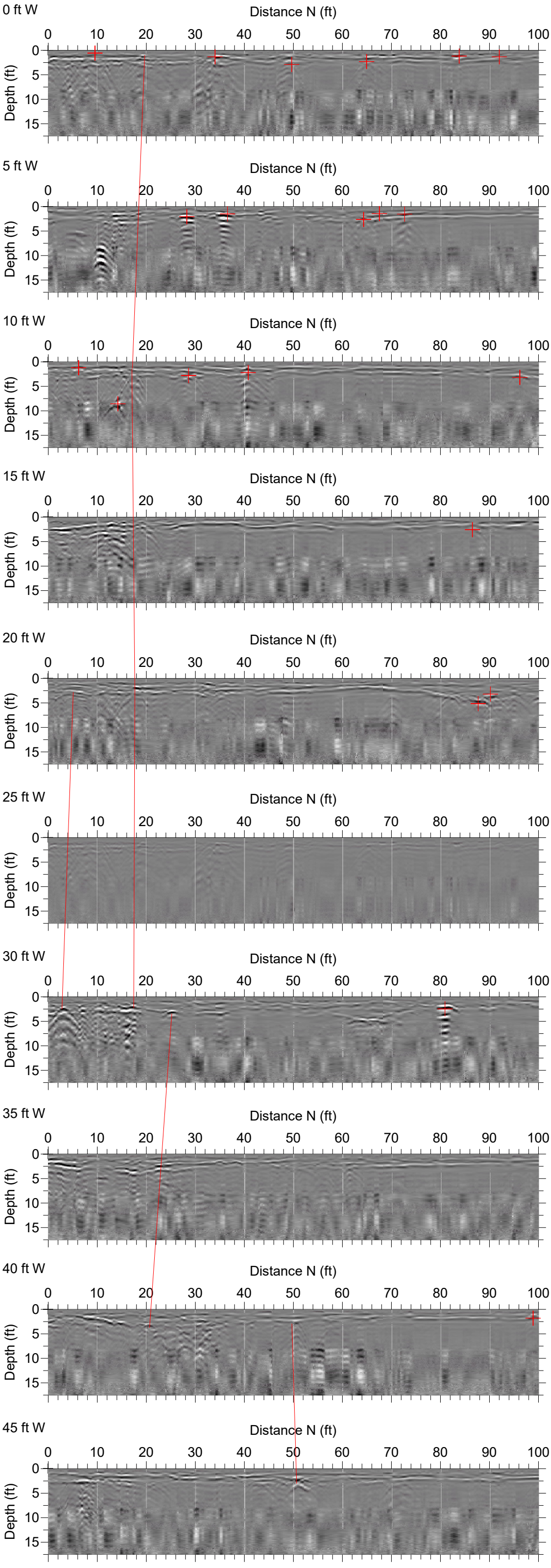
0 ft 20 ft 40 ft

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**Area 2 EW GPR Profiles**
**90ft N - 100ft N**

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|---|---|---|---|
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| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | **FIGURE 11** |
| CHECK | JL | | |
| REVIEW | -- | | |




## Legend

- Discrete GPR Anomaly
- Continuous GPR Anomaly

0 ft 20 ft 40 ft

PROJECT

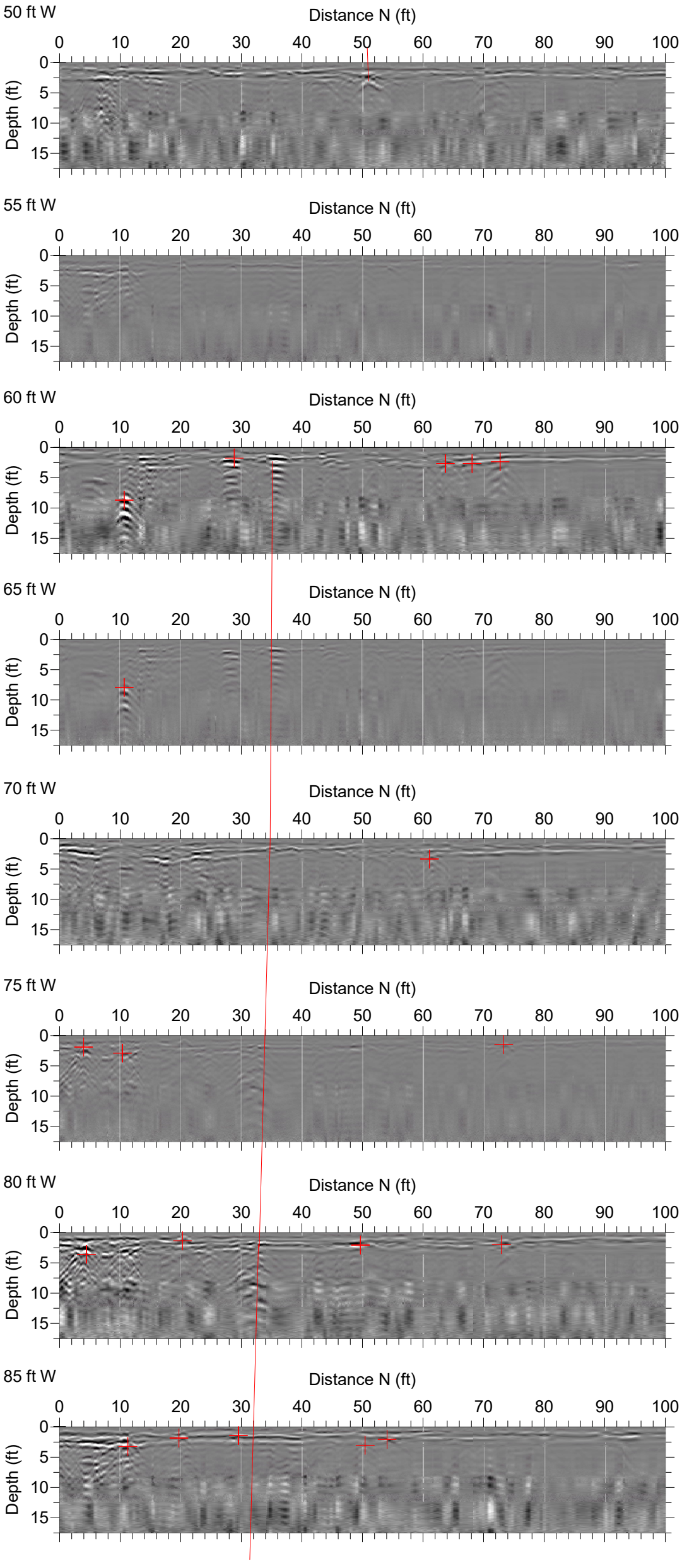
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE

# Area 2 NS GPR Profiles 0ft W - 45ft W


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|---|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. | |
| DESIGN | -- | | SCALE AS SHOWN | REV. |
| CADD | AK | | FIGURE 12 | |
| CHECK | JL | | | |
| REVIEW | -- | | | |




0 ft 20 ft 40 ft

## Legend

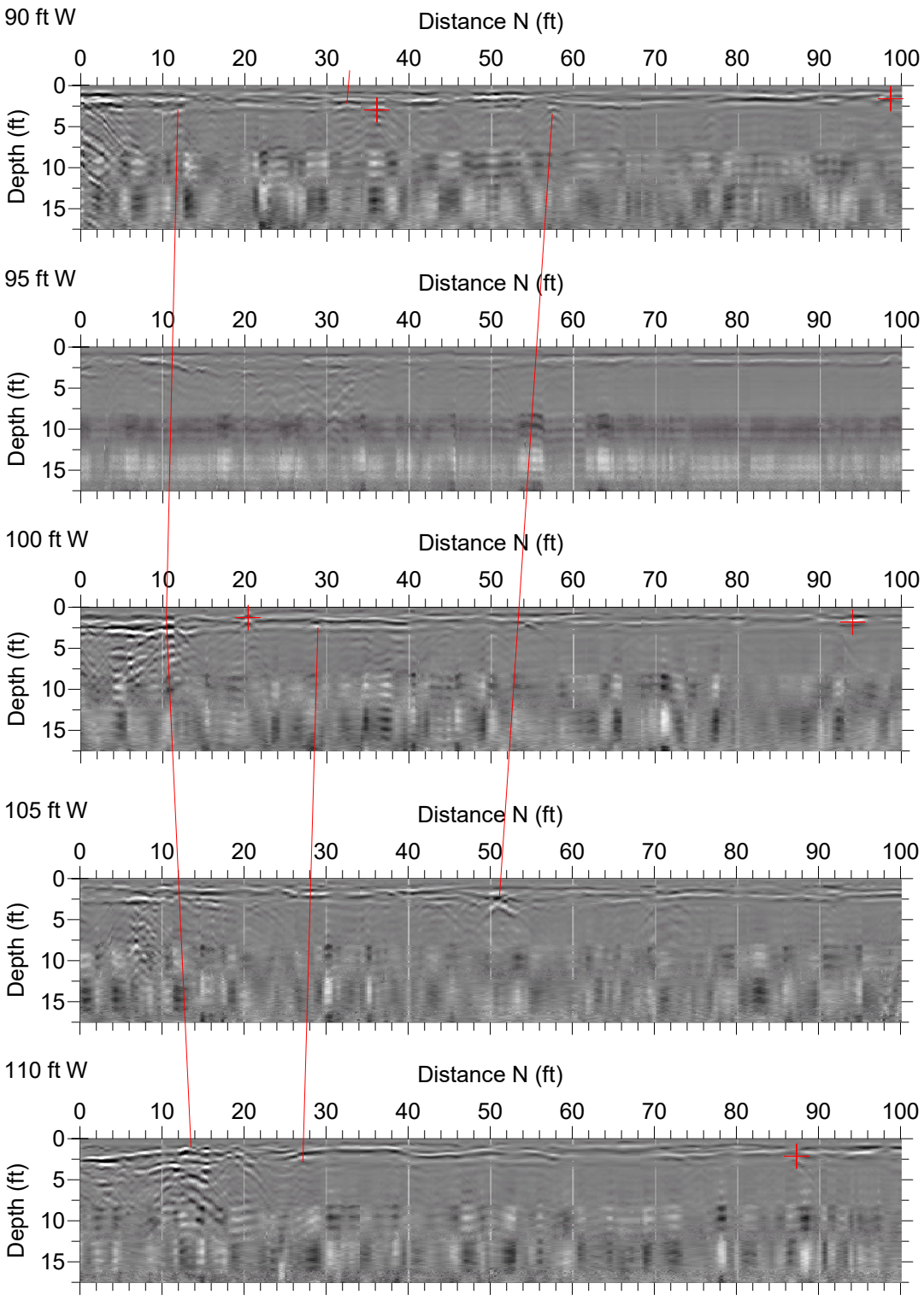
- Discrete GPR Anomaly
- Continuous GPR Anomaly

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**Area 2 NS GPR Profiles**
**50ft W - 85ft W**

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|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. |
| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | **FIGURE 13** |
| CHECK | JL | | |
| REVIEW | -- | | |




## Legend

- Discrete GPR Anomaly
- Continuous GPR Anomaly

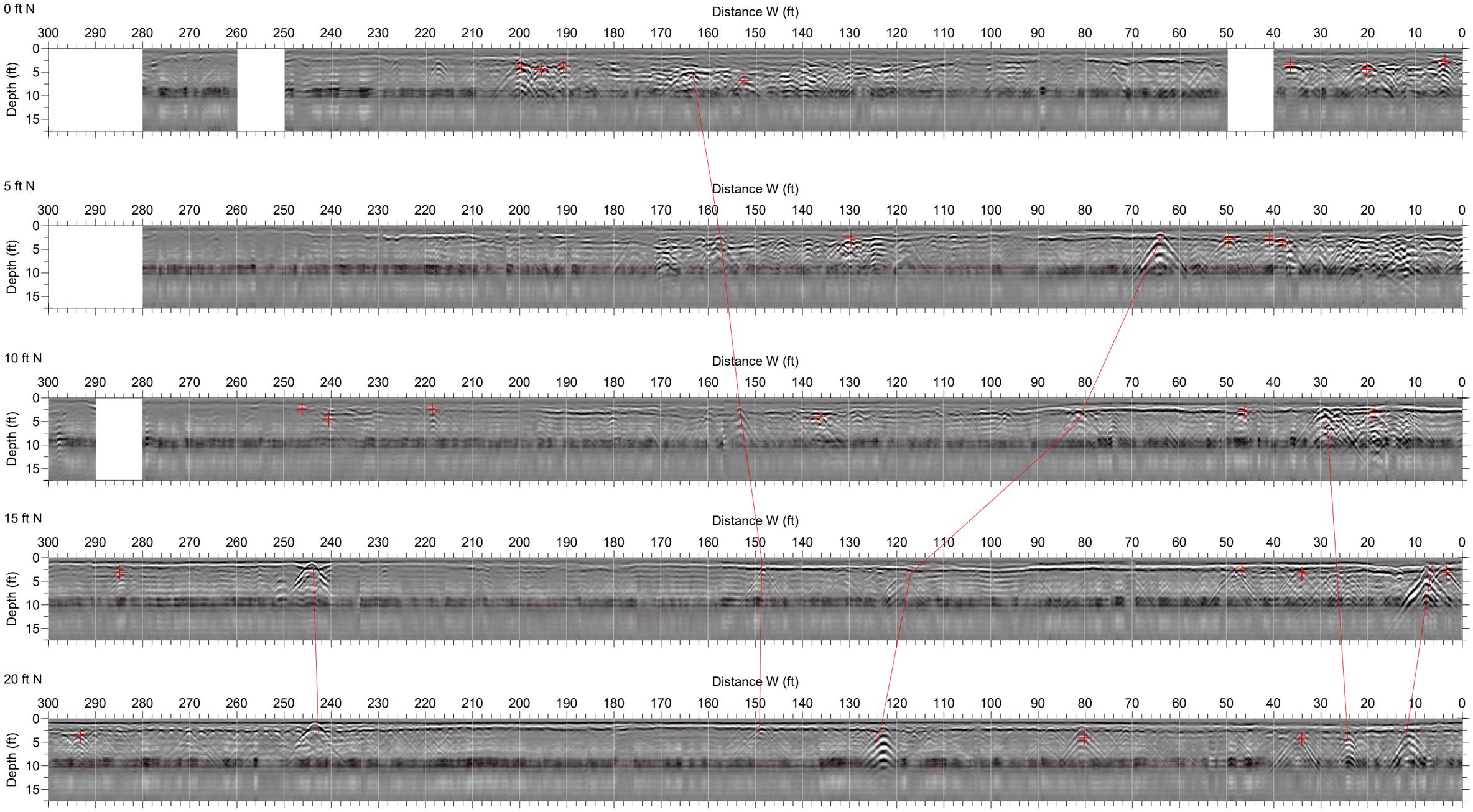
0 ft 20 ft 40 ft

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
# Area 2 NS GPR Profiles
# 90ft W - 110ft W

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P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

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|---|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. | |
| DESIGN | -- | | SCALE AS SHOWN | REV. |
| CADD | AK | | FIGURE 14 | |
| CHECK | JL | | | |
| REVIEW | -- | | | |




## Legend

- Discrete GPR Anomaly
- Continuous GPR Anomaly

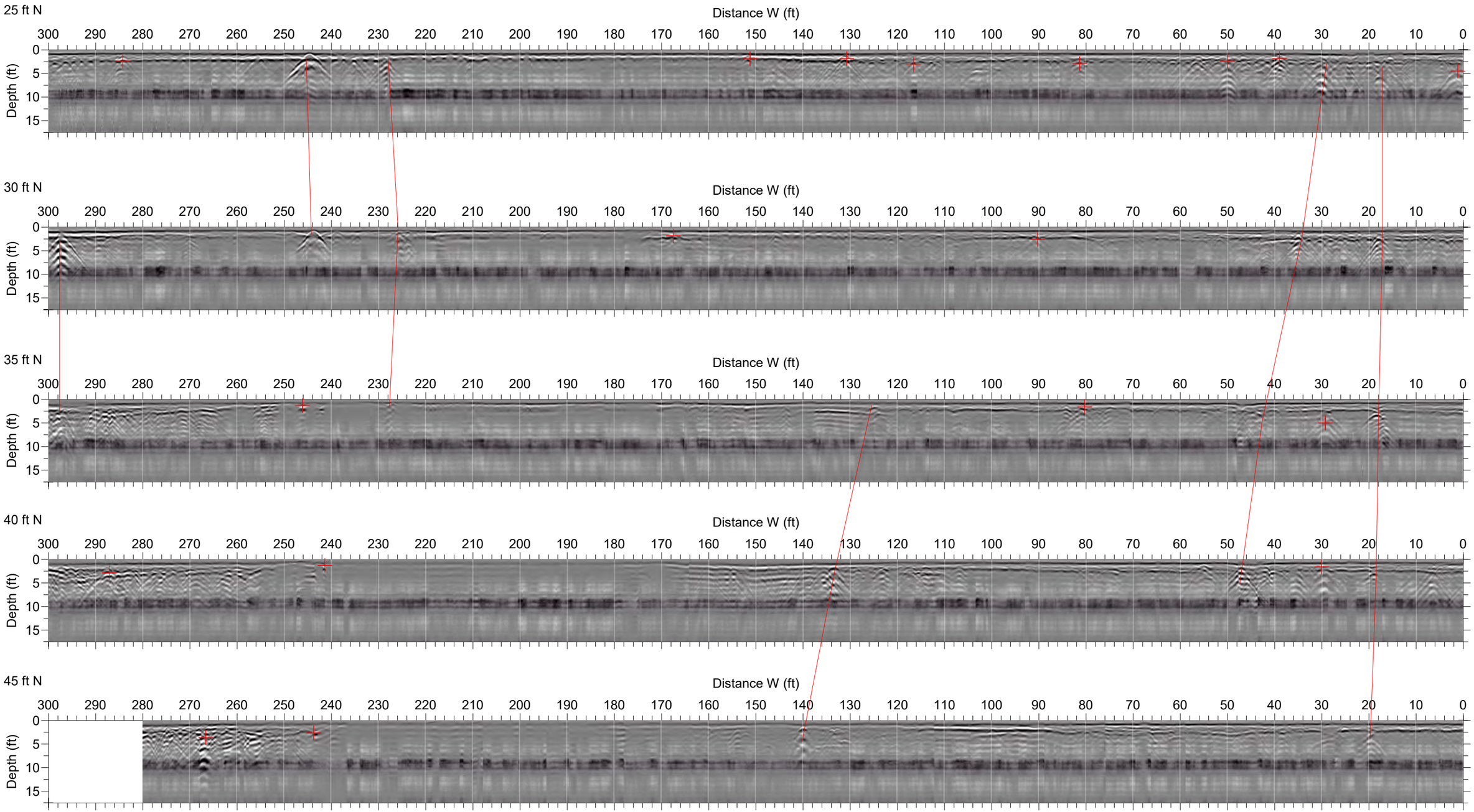
0 ft 20 ft 40 ft

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**Area 3 EW GPR Profiles**
**0ft N - 20ft N**


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Redmond, WA 98073-2229
Tel: 425-890-4321


| | | | |
|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. |
| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | **FIGURE 15** |
| CHECK | JL | | |
| REVIEW | -- | | |




## Legend

- Discrete GPR Anomaly
- Continuous GPR Anomaly

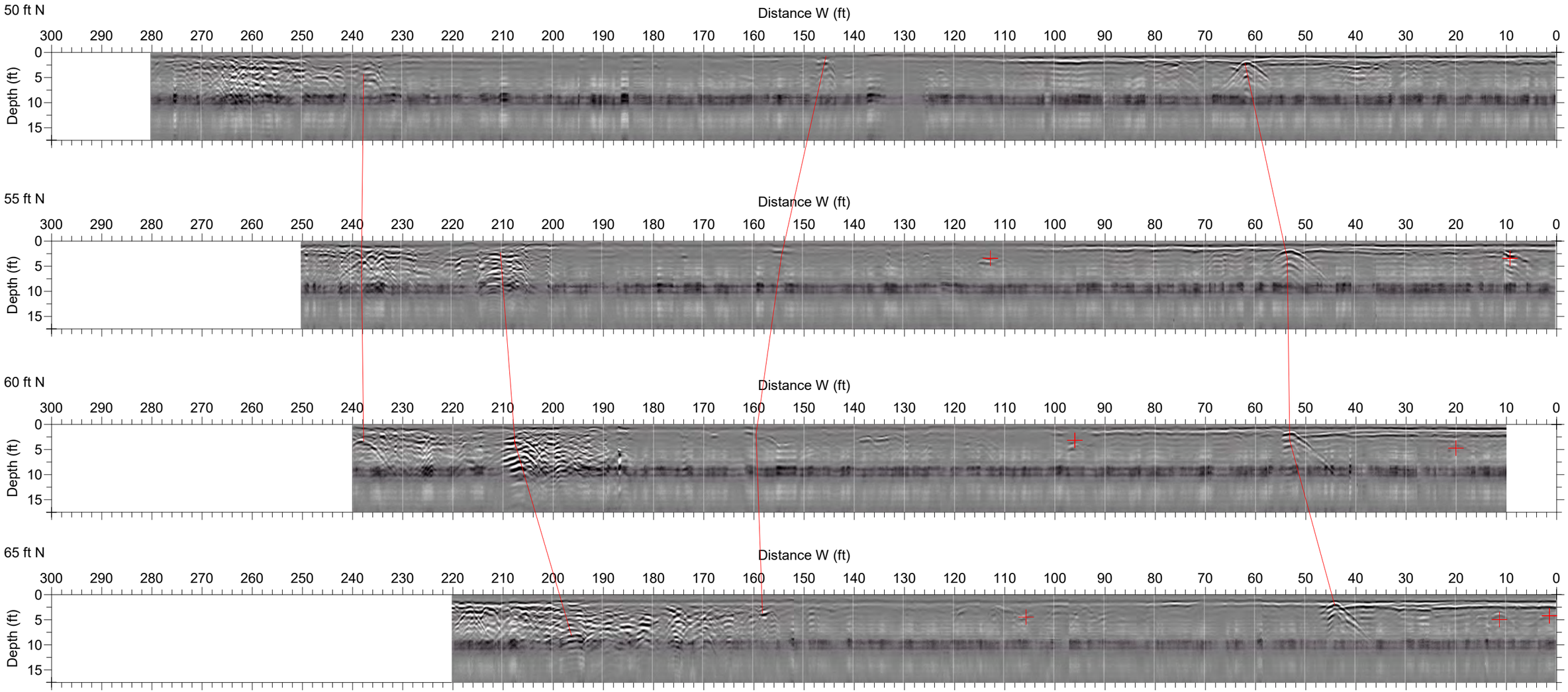
0 ft 20 ft 40 ft

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**Area 3 EW GPR Profiles**
**25ft N - 45ft N**

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| | | | |
|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. |
| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | |
| CHECK | JL | | **FIGURE 16** |
| REVIEW | -- | | |




## Legend

- Discrete GPR Anomaly
- Continuous GPR Anomaly

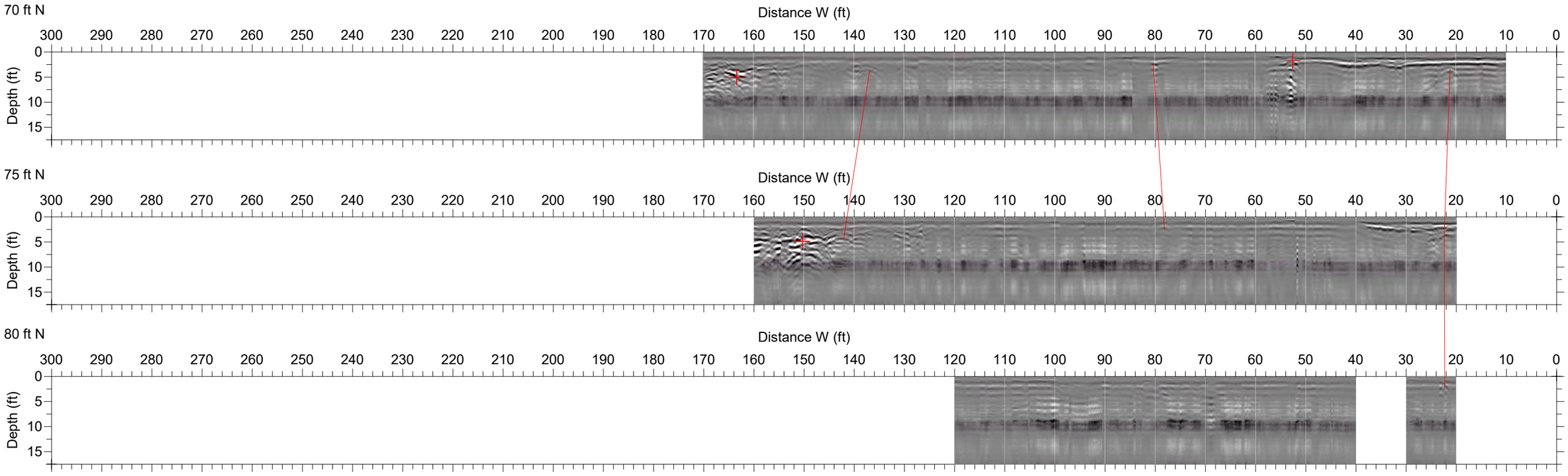
0 ft 20 ft 40 ft

PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE
**Area 3 EW GPR Profiles**
**50ft N - 65ft N**

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

| | | | |
|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. |
| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | |
| CHECK | JL | | **FIGURE 17** |
| REVIEW | -- | | |




## Legend

- Discrete GPR Anomaly
- Continuous GPR Anomaly

0 ft 20 ft 40 ft

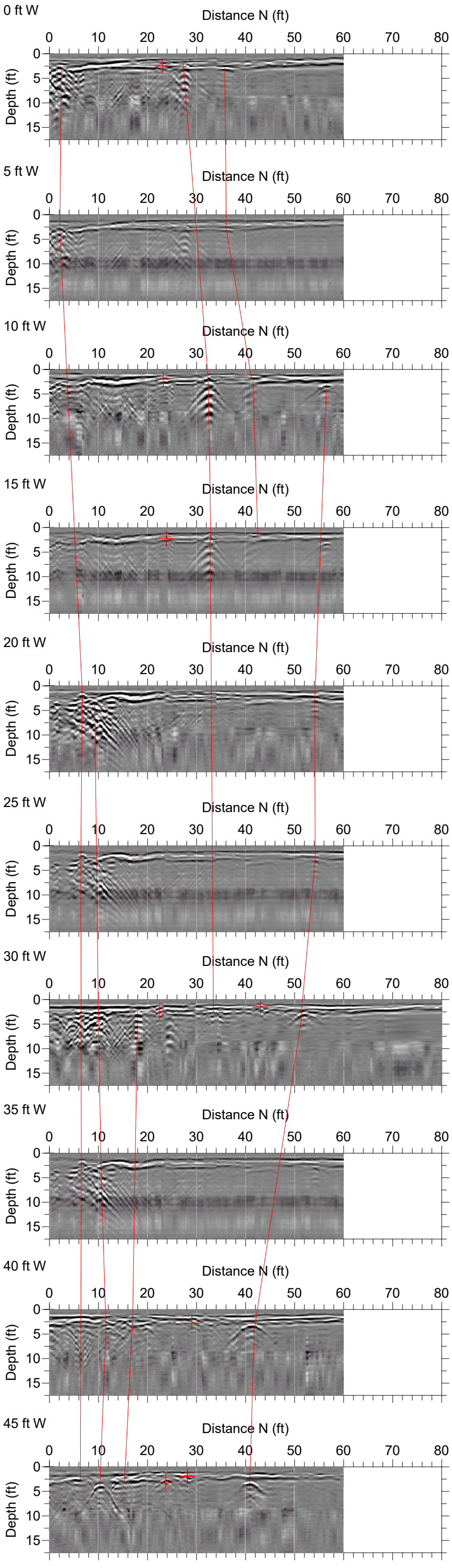
PROJECT
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

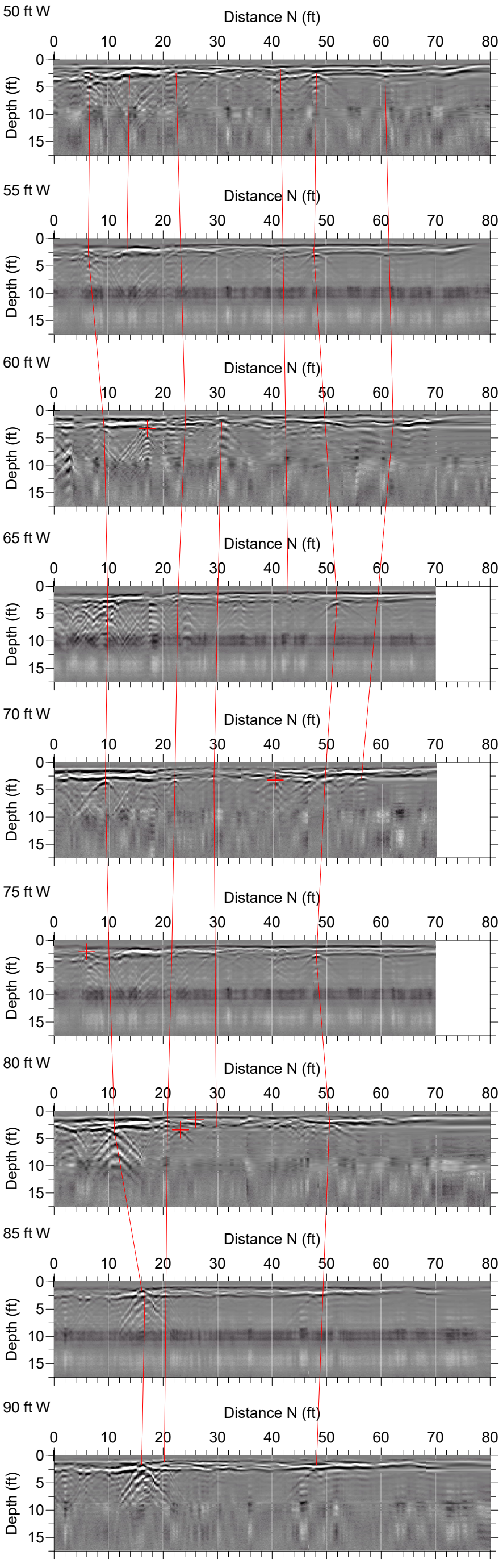
TITLE
**Area 3 EW GPR Profiles**
**70ft N - 80ft N**

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

| | | |
|---|---|---|
| Project #: 111-0328.000 | | FILE No. |
| DESIGN | -- | SCALE AS SHOWN REV. |
| CADD | AK | |
| CHECK | JL | |
| REVIEW | -- | |

**FIGURE 18**




## Legend

Discrete GPR Anomaly

Continuous GPR Anomaly

0 ft 20 ft 40 ft

PROJECT

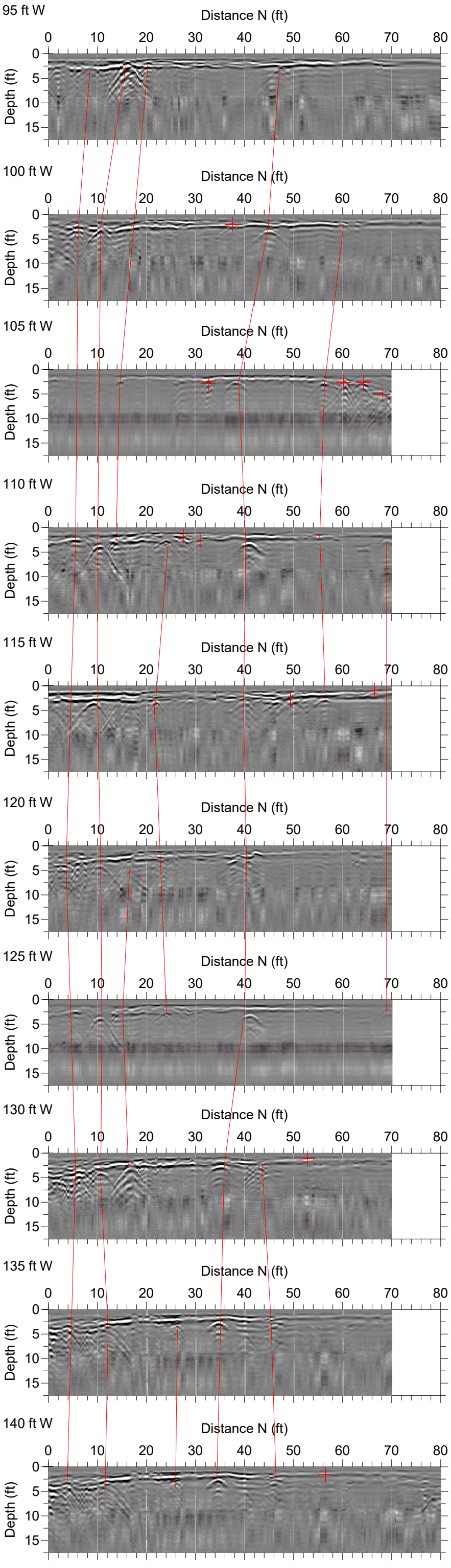
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

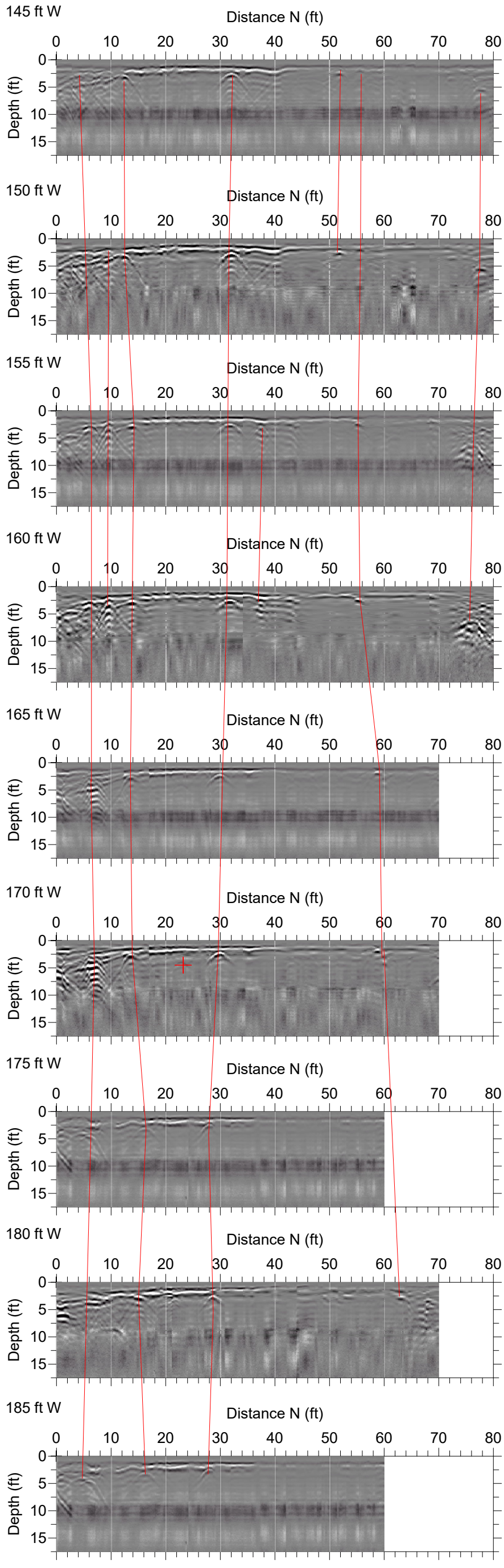
TITLE

# Area 3 NS GPR Profiles 0ft W - 90ft W


Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321


| | | | |
|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. |
| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | |
| CHECK | JL | | **FIGURE 19** |
| REVIEW | -- | | |




## Legend

Discrete GPR Anomaly

Continuous GPR Anomaly

0 ft 20 ft 40 ft

PROJECT

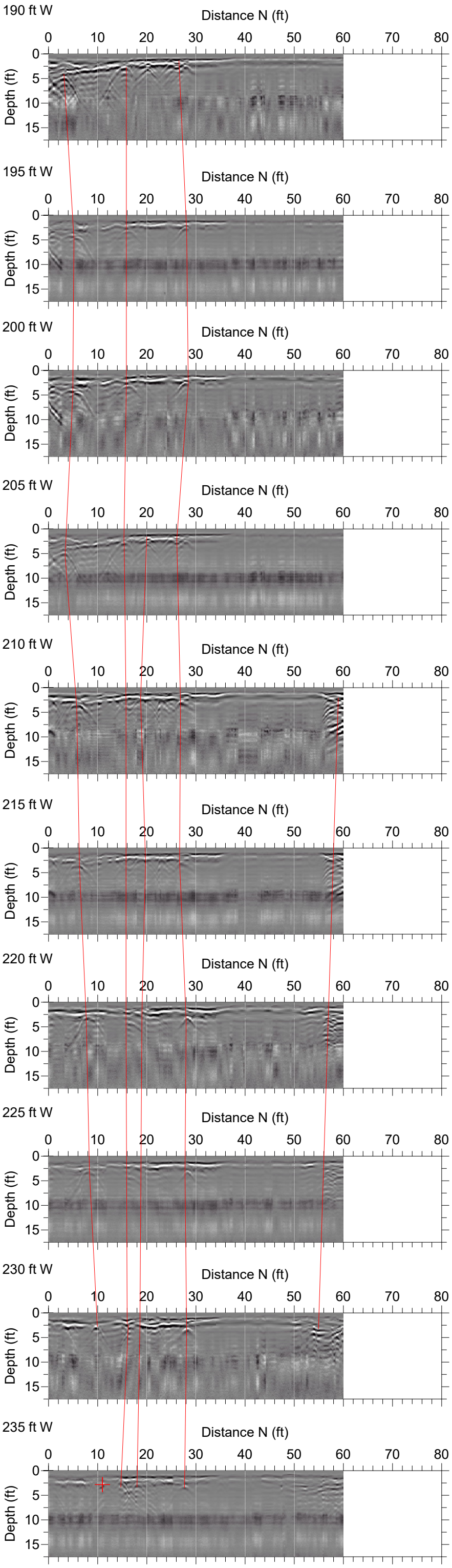
**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

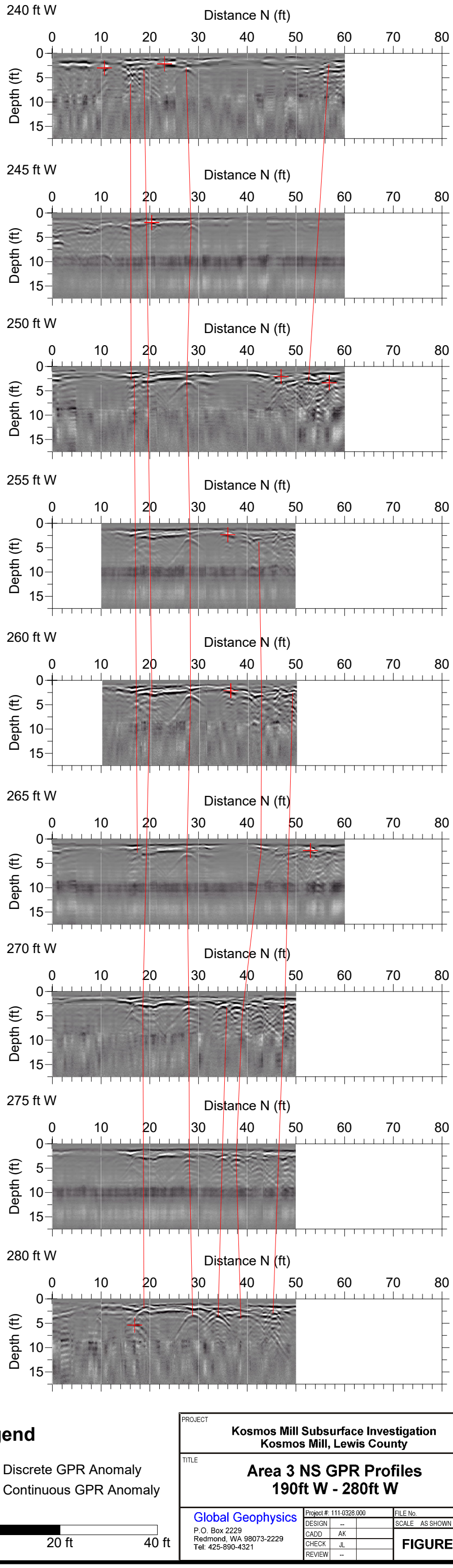
TITLE

# Area 3 NS GPR Profiles 95ft W - 185ft W


Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321


| | | | |
|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. |
| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | |
| CHECK | JL | | **FIGURE 20** |
| REVIEW | -- | | |




## Legend

- Discrete GPR Anomaly
- Continuous GPR Anomaly

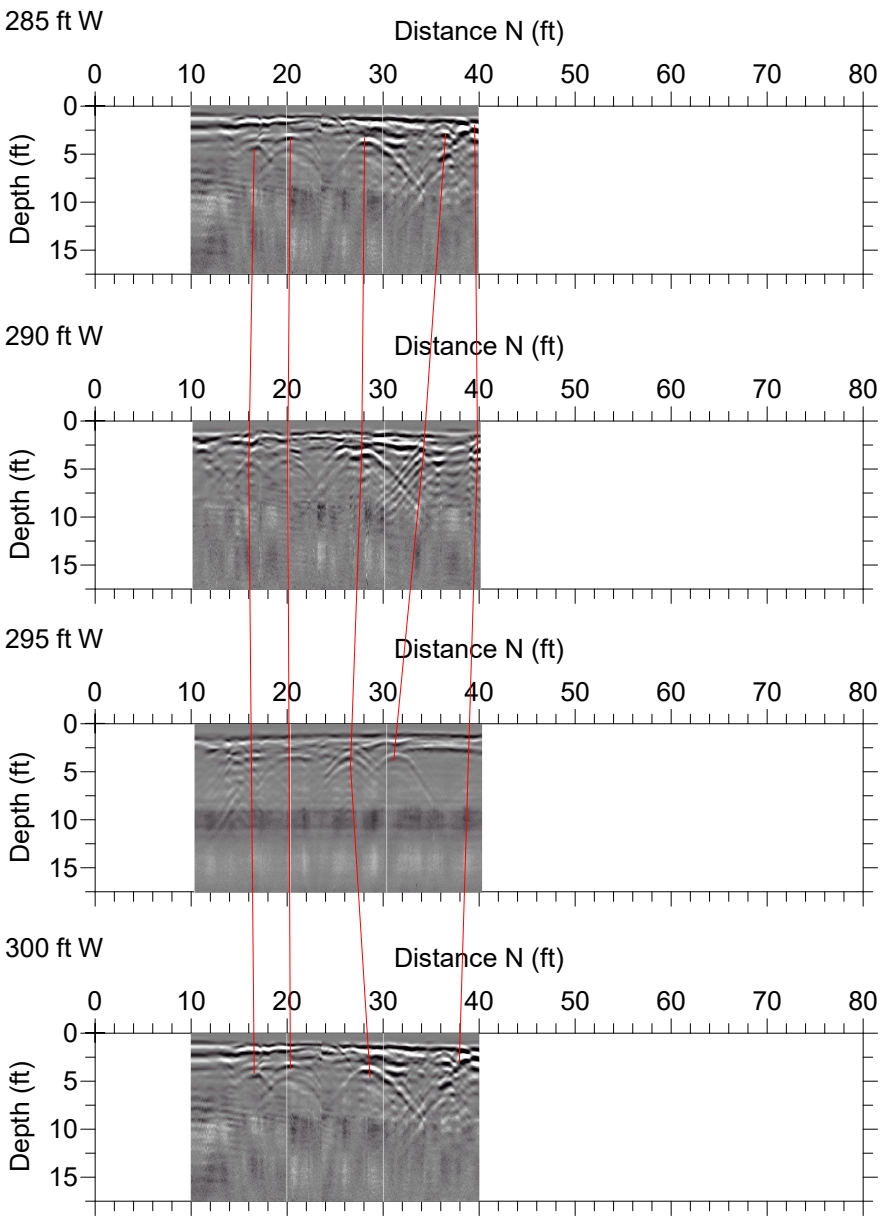
0 ft — 20 ft — 40 ft

**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

# Area 3 NS GPR Profiles
# 190ft W - 280ft W


Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321


| | | | |
|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. |
| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | |
| CHECK | JL | | **FIGURE 21** |
| REVIEW | -- | | |




## Legend

Discrete GPR Anomaly

Continuous GPR Anomaly

0 ft 20 ft 40 ft

PROJECT

**Kosmos Mill Subsurface Investigation**
**Kosmos Mill, Lewis County**

TITLE

# Area 3 NS GPR Profiles
# 285ft W - 300ft W

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

| | | | |
|---|---|---|---|
| Project #: 111-0328.000 | | | FILE No. |
| DESIGN | -- | | SCALE AS SHOWN REV. |
| CADD | AK | | |
| CHECK | JL | | FIGURE 22 |
| REVIEW | -- | | |

# APPENDIX E
# Copper Background Study Exploration Logs and Analysis

**TABLE E-1**
**SUMMARY OF SOIL QUALITY DATA**
KOSMOS MILL
MORTON, WASHINGTON

| Sample Location | Sample Date | Inorganic Compounds |
|---|---|---|
| | | Copper |
| | | mg/kg |
| BSS-1 | 06/02/2025 | **48** |
| BSS-2 | 06/02/2025 | **20** |
| BSS-3 | 06/02/2025 | **27** |
| BSS-4 | 06/03/2025 | **35** |
| BSS-5 | 06/03/2025 | **44** |
| BSS-6 | 06/03/2025 | **50** |
| BSS-7 | 06/04/2025 | **28** |
| BSS-8 | 06/04/2025 | **36** |
| BSS-9 | 06/05/2025 | **32** |
| BSS-10 | 06/05/2025 | **29** |
| BSS-11 | 06/05/2025 | **45** |
| BSS-12 | 06/11/2025 | **18** |
| BSS-13 | 06/11/2025 | **15** |
| BSS-14 | 06/11/2025 | **41** |
| BSS-15 | 06/11/2025 | **40** |

***ABBREVIATIONS AND NOTES:***

*mg/kg: milligrams per kilogram*

***Bold*** *values indicate a detected concentration.*

**TABLE E-2**

**MTCA STATISTICS RESULTS FOR COPPER**

KOSMOS MILL

MORTON, WASHINGTON

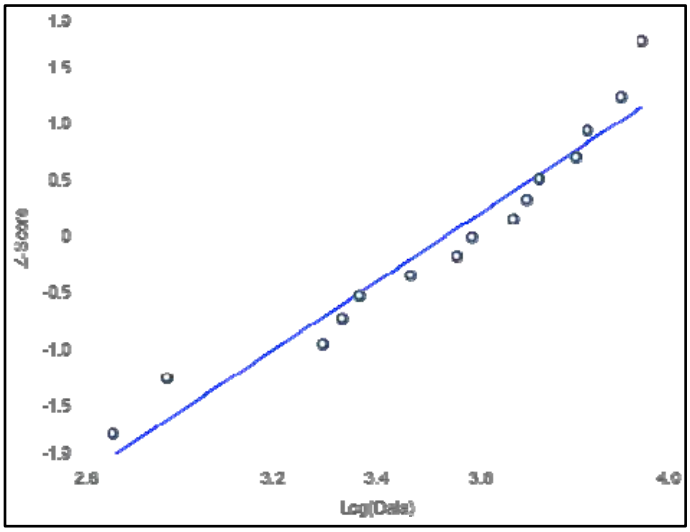
| | |
|---|---|
| **Num of Samples** | 15 |
| **Num of Detects** | 15 |
| **Num of Non-Detects** | 0 |
| **% of Non-Detects** | 0 |
| **Min Detect Conc** | 18 |
| **Max Detect Conc** | 50 |

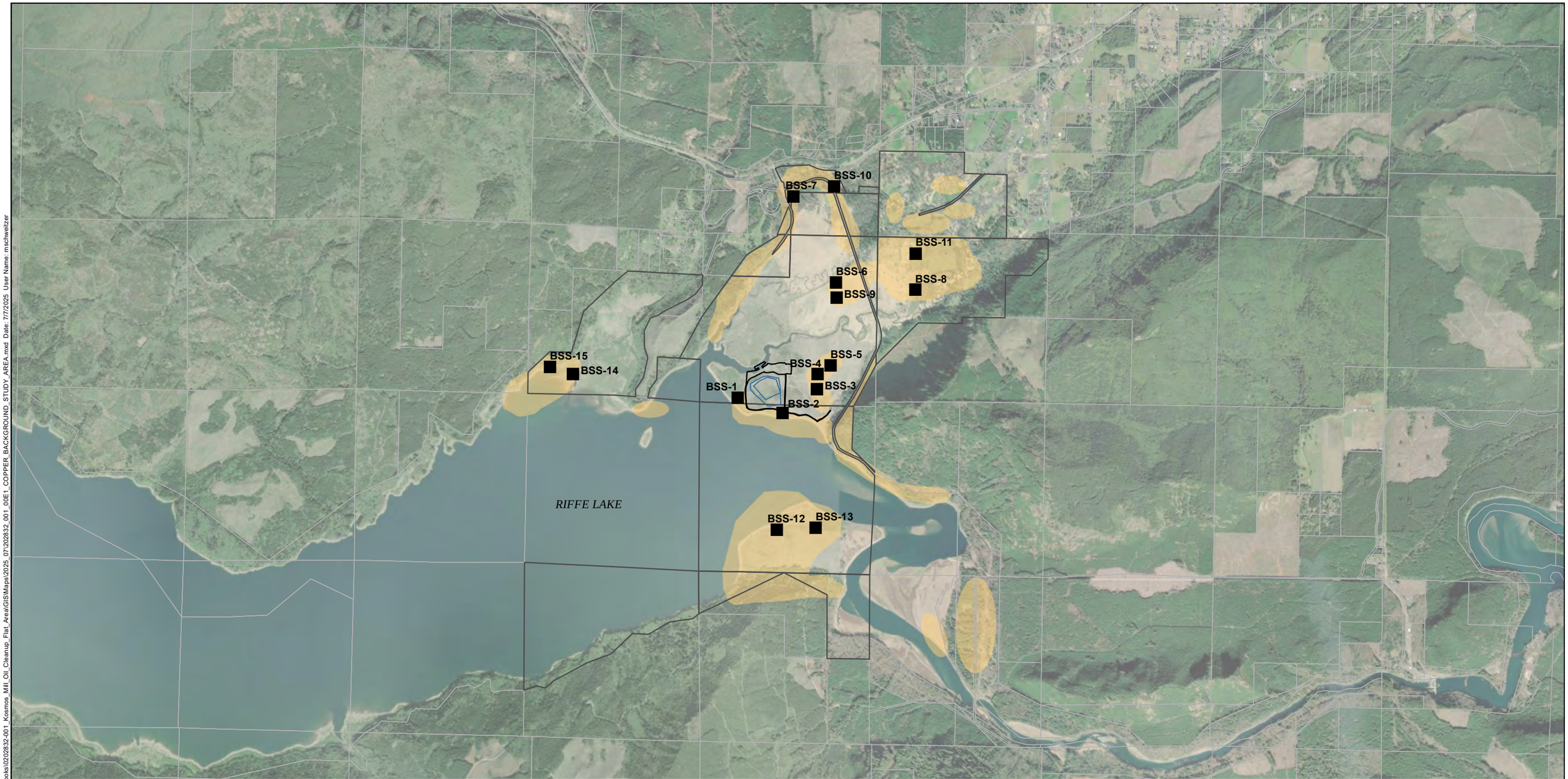
| | |
|---|---|
| **Mean** | 35.47 |
| **Median** | 36 |
| **StdDev** | 9.72 |
| **Variance** | 94.41 |
| **CoeffOfVar** | 27.4 |
| **Skewness** | -0.32 |
| **Kurtosis** | -0.75 |

| | |
|---|---|
| **Distribution** | LogNormal |
| **Method** | Probability |
| **Normal R2** | 0.98 |
| **LogNormal R2** | 0.93 |
| **Distribution Comments** | LogNormal $R^2$ >= 0.90 |

| | |
|---|---|
| **95 UCL Value** | 41.63 |

| | |
|---|---|
| **90th Percentile** | 52.03 |
| **4x50th Percentile** | 136.28 |
| **50th Percentile** | 34.07 |






**LEGEND**

- BACKGROUND STUDY SAMPLE
- APPROXIMATE LOCATION OF FORMER LOG POND
- 2019-2020 AREA OF POTENTIAL EFFECT (APE)
- CULTURALLY CLEARED AREA
- CITY OF TACOMA PARCEL BOUNDARY
- PARCEL BOUNDARY

**NOTES:**

1. FEATURE LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGE SOURCE: ESRI
3. PARCEL DATA SOURCE: LEWIS COUNTY

N

0 3,000 6,000
SCALE IN FEET

HALEY ALDRICH

KOSMOS MILL
MORTON, WASHINGTON

# COPPER BACKGROUND STUDY AREA

JULY 2025

FIGURE E-1

Document Path: \\haleyaldrich.com\share\sea_projects\Notebooks\022832-001_Kosmos_Mill_Oil_Cleanup_Flat_Area\GIS\Maps\2025_07\202832_001_00E1_COPPER_BACKGROUND_STUDY_AREA.mxd Date: 7/7/2025 User Name: mschweitzer

# Data Usability Summary Report

**Project Name: Former Kosmos Mill**

**Project Description: Soil Samples**

**Sample Dates: June 2 – 11, 2025**

**Analytical Laboratory: Friedman & Bruya – Seattle, WA**

**Validation Performed by: Kristina Ilina**

**Validation Reviewed by: Katherine Miller**

**Validation Date: June 30, 2025**

---

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the analytical results for the Sample Delivery Groups (SDGs) listed. This DUSR is organized into the following sections:

1. **Sample Delivery Group Numbers 506150 and 506255**
2. **Explanations**
3. **Glossary**
4. **Abbreviations**
5. **Qualifiers**

**References**

This data validation and usability assessment was performed per the guidance and requirements established by the United States Environmental Protection Agency (USEPA) using the following reference materials:

- National Functional Guidelines (NFG) for Inorganic Data Review.
- The project-specific Work Plan (WP), herein referred to as the specified limits (see references section).

Data reported in this sampling event were reported to the laboratory reporting limit (RL).

Sample data were qualified in accordance with the laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives (DQOs) for the project and are therefore usable; any exceptions are noted in the following pages.

All results are usable with no exceptions noted.

# 1. Sample Delivery Group Numbers 506150 and 506255

## 1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG numbers:

- 506150, dated June 17, 2025; and
- 506255, dated June 24, 2025.

Samples were collected, preserved, and shipped following standard chain of custody (COC) protocols. Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- The bottle label was smeared on sample BSS-2.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Method | Holding Time |
|---|---|---|---|---|---|---|
| BSS-1 | N | 506150-01 | 06/02/2025 | SO | Copper by SW6020B | 180 days for solid unpreserved |
| BSS-2 | N | 506150-02 | 06/02/2025 | SO | | |
| BSS-3 | N | 506150-03 | 06/02/2025 | SO | | |
| BSS-4 | N | 506150-04 | 06/03/2025 | SO | | |
| BSS-5 | N | 506150-05 | 06/03/2025 | SO | | |
| BSS-6 | N | 506150-06 | 06/03/2025 | SO | | |
| BSS-7 | N | 506150-07 | 06/04/2025 | SO | | |
| BSS-8 | N | 506150-08 | 06/04/2025 | SO | | |
| BSS-9 | N | 506150-09 | 06/05/2025 | SO | | |
| BSS-10 | N | 506150-10 | 06/05/2025 | SO | | |
| BSS-11 | N | 506150-11 | 06/05/2025 | SO | | |
| BS-FD-1 | FD | 506150-12 | 06/05/2025 | SO | | |
| BSS-12 | N | 506255-01 | 06/11/2025 | SO | | |
| BSS-13 | N | 506255-02 | 06/11/2025 | SO | | |
| BSS-14 | N | 506255-03 | 06/11/2025 | SO | | |
| BSS-15 | N | 506255-04 | 06/11/2025 | SO | | |

## 1.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

## 1.3 REPORTING LIMITS AND SAMPLE DILUTIONS

All sample dilutions were reviewed and found to be justified. Only detected analytes were reported from a sample dilution analysis.

## 1.4 REPORTING BASIS (WET/DRY)

Refer to Section E 1.1. Soil data in this SDG were reported on a dry-weight basis.

## 1.5 LABORATORY CONTROL SAMPLES

Refer to Section E 1.3. Compounds associated with the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses associated with client samples exhibited recoveries and relative percent differences (RPDs) within the specified limits.

## 1.6 MATRIX SPIKE SAMPLES

Refer to Section E 1.4. The samples below were used for matrix spike/matrix spike duplicate (MS/MSD):

| Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method |
|---|---|---|
| 506150-01 | BSS-1 | Copper by SW6020B |

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits.

## 1.7 BLANK SAMPLE ANALYSIS

Refer to Section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

## 1.8 DUPLICATE SAMPLE ANALYSIS

Refer to Section E 1.6. The laboratory did not analyze any laboratory duplicates as per the method or laboratory SOP.

The following samples were used for field duplicate analysis. RPDs were all below 50 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL).

| Primary Sample ID | Duplicate Sample ID | Methods |
|---|---|---|
| BSS-11 | BS-FD-1 | Copper by SW6020B |

## 1.9 PRECISION AND ACCURACY

Refer to Section E 1.7. Where required by the method, some measurement of analytical accuracy and precision was reported for each method with the site samples.

## 1.10 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the DQOs for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable, as no data was rejected. No qualifiers were applied to any data in this report.

## 2. Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.1 Reporting Basis (Wet/Dry)
  - Soil samples can be reported on either a wet (as received) or dry-weight basis. Dry weight data indicate calculations were made to compensate for the moisture content of the soil sample.
- E 1.3 Laboratory Control Samples
  - The LCS/LCSD analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - MS/MSD data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post-digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
  - The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the RPD found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.
  - Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the %R of certain spiked compounds. This can be assessed using LCS, blank spike (BS), MS, and/or surrogate recoveries.

## 3. Glossary

*Analyte names may be abbreviated for simplicity. Please reference the laboratory report for the full analyte name.
Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - ng/kg nanograms per kilogram
  - µg/L micrograms per liter
  - µg/m3 micrograms per cubic meter
  - mg/kg milligrams per kilogram
  - mg/L milligrams per liter
  - ppbv/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
  - pg/L picograms per liter
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - SSV Sub-slab Vapor
  - ST Solid Waste
  - WM Stormwater
  - WQ Water Quality control matrix
  - WS Surface Water
  - WW Waste Water
- Table Footnotes:
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Common Symbols:
  - % percent
  - < less than
  - ≤ less than or equal to
  - > greater than
  - ≥ greater than or equal to
  - = equal
  - °C degrees Celsius
  - ± plus or minus
  - ~ approximately
  - x times (multiplier)
- Fractions:
  - N Normal (method cannot be filtered)
  - D Dissolved (filtered)
  - T Total (unfiltered)

# 4. Abbreviations

| | |
|---|---|
| %D | Percent Difference |
| %R | Percent Recovery |
| %RSD | Percent Relative Standard Deviation |
| %v/v | Percent volume by volume |
| 2s | 2 sigma |
| 4,4-DDT | 4 4-dichlorodiphenyltrichloroethane |
| Abs Diff | Absolute Difference |
| amu | atomic mass unit |
| BPJ | Best Professional Judgement |
| BS | Blank Spike |
| CCB | Continuing Calibration Blank |
| CCV | Continuing Calibration Verification |
| CCVL | Continuing Calibration Verification Low |
| COC | Chain of Custody |
| COM | Combined Isotope Calculation |
| Cr (VI) | Hexavalent Chromium |
| CRI | Collision Reaction Interface |
| DoD | Department of Defense |
| DQO | data quality objective |
| DUSR | Data Usability Summary Report |
| EIS | Extraction Internal Standard |
| EMPC | Estimated Maximum Possible Concentration |
| FBK | Field Blank Contamination |
| FDP | Field Duplicate |
| GC | Gas Chromatograph |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| GPC | Gel Permeation Chromatography |
| $H_2$ | Hydrogen gas |
| HCl | Hydrochloric Acid |
| ICAL | Initial Calibration |
| ICB | Initial Calibration Blank |
| ICP/MS | Inductively Coupled Plasma/Mass Spectrometry |
| ICV | Initial Calibration Verification |
| ICVL | Initial Calibration Verification Low |
| IPA | Isopropyl Alcohol |
| LC | Laboratory Control |
| LCS/LCSD | Laboratory Control Sample/Laboratory Control Sample Duplicate |
| MBK | Method Blank Contamination |
| MDC | Minimum Detectable Concentration |
| MDL | Laboratory Method Detection Limit |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | not applicable |
| ND | Non-Detect |
| NFG | National Functional Guidelines |
| $NH_3$ | Ammonia |
| NYSDEC | New York State Department of Environmental Conservation |
| PAH | Polycyclic Aromatic Hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PDS | Post-Digestion Spike |
| PEM | Performance Evaluation Mixture |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFBA | Perfluorobutanoic Acid |
| PFD | Perfluorodecalin |
| PFOA | Perfluorooctanoic Acid |
| PFOS | Perfluorooctane sulfonate |
| PFPeA | Perfluoropentanoic Acid |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QSM | Quality Systems Manual |
| $R^2$ | R-squared value |
| Ra-226 | Radium-226 |
| Ra-228 | Radium-228 |
| RESC | Resolution Check Measure |
| RL | Laboratory Reporting Limit |
| RPD | Relative Percent Difference |
| RRF | Relative Response Factor |
| RT | Retention Time |
| SAP | Sampling Analysis Plan |
| SDG | Sample Delivery Group |
| SIM | Selected ion monitoring |
| SOP | Standard Operating Procedure |
| SPE | Solid-Phase Extraction |
| SVOC | Semi-Volatile Organic Compound |
| TCLP | Toxicity Characteristic Leaching Procedure |
| TIC | Tentatively Identified Compound |
| TKN | Total Kjeldahl Nitrogen |
| TPH | Total Petroleum Hydrocarbon |
| TPU | Total Propagated Uncertainty |
| USEPA | U.S. Environmental Protection Agency |
| VOC | Volatile Organic Compound |
| WP | Work Plan |

## 5. Qualifiers

The qualifiers below are from the USEPA NFG and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:

  U — The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".

  B — The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers:

  E — The compound was quantitated above the calibration range.

  D — The concentration is based on a diluted sample analysis.

- Validation Qualifiers:

  J — The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  J+ — The result is an estimated quantity, but the result may be biased high.

  J- — The result is an estimated quantity, but the result may be biased low.

  J/UJ — as listed in exception tables J applies to detected data and UJ applies to non-detected data as reported by the laboratory.

  UJ — The compound was not detected. The reported sample quantitation limit is approximate.

  NJ — The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.

  R — The sample results were rejected as unusable; the compound may or may not be present in the sample.

  S — Result is suspect. See DUSR for details.

## References


1. Haley & Aldrich, Inc., 2025. Copper Background Study Work Plan for Former Kosmos Mill - Morton, Washington. April.

2. United States Environmental Protection Agency, 2020. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-542-R-20-006. November.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Elizabeth Webber-Bruya
Ann Webber-Bruya
Michael Erdahl
Vineta Mills
Eric Young

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office@friedmanandbruya.com
www.friedmanandbruya.com

June 17, 2025

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on June 6, 2025 from the Kosmos 0202832-001, F&BI 506150 project. There are 16 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data, Andrew Nakahara
HNA0617R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 6, 2025 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos 0202832-001, F&BI 506150 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 506150 -01 | BSS-1 |
| 506150 -02 | BSS-2 |
| 506150 -03 | BSS-3 |
| 506150 -04 | BSS-4 |
| 506150 -05 | BSS-5 |
| 506150 -06 | BSS-6 |
| 506150 -07 | BSS-7 |
| 506150 -08 | BSS-8 |
| 506150 -09 | BSS-9 |
| 506150 -10 | BSS-10 |
| 506150 -11 | BSS-11 |
| 506150 -12 | BS-FD-1 |

All quality control requirements were acceptable.

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-01 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-01 x5.209 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 48 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-02 x2 |
| Date Analyzed: | 06/12/25 | Data File: | 506150-02 x2.055 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 20 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-03 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-03 x5.222 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 27 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-4 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-04 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-04 x5.234 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 35 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-05 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-05 x5.235 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 44 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-6 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-06 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-06 x5.239 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 50 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-7 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-07 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-07 x5.240 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 28 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-8 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-08 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-08 x5.241 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 36 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-9 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-09 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-09 x5.242 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 32 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-10 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-10 x5.243 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 29 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-11 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-11 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-11 x5.244 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 45 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BS-FD-1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/06/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | 506150-12 x5 |
| Date Analyzed: | 06/11/25 | Data File: | 506150-12 x5.245 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 39 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/11/25 | Lab ID: | I5-496 mb |
| Date Analyzed: | 06/11/25 | Data File: | I5-496 mb.142 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | <5 |

Date of Report: 06/17/25
Date Received: 06/06/25
Project: Kosmos 0202832-001, F&BI 506150

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 506150-01 x5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Copper | mg/kg (ppm) | 50 | 45.9 | 96 b | 100 b | 75-125 | 4 b |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Copper | mg/kg (ppm) | 50 | 96 | 80-120 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported between the method detection limit and the lowest calibration point. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Angie Goodwin: agoodwin@haleyaldrich.com
Andrew Nakamura: anakamura@ "
Victoria Pechilvan: vpechilvan@ "

506150

# SAMPLE CHAIN OF CUSTODY

06/06/25 ISM/FI

Report To

Company Haley & Aldrich Inc.

Address 3131 Elliott Ave Ste 600

City, State, ZIP Seattle, WA 98121

Phone 206-826-4566 Email ↑ ↑ ↑

SAMPLERS (*signature*)

PROJECT NAME: Kosmos

PO #: 0202832-001

REMARKS: ISM

Project specific RLs? - Yes / No

INVOICE TO

Page # 1 of 2

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| | | | | | | ANALYSES REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | copper | * ISM | | | Notes |
| BSS-1 | 01 | 6/2/25 | 13:00 | soil | 1 | | | | | | | | X | ✓ | | | * per Remarks ✓ E/6/16 |
| BSS-2 | 02 | 6/2/25 | 14:40 | soil | 1 | | | | | | | | X | ✓ | | | |
| BSS-3 | 03 | 6/2/25 | 16:30 | soil | 1 | | | | | | | | X | ✓ | | | |
| BSS-4 | 04 | 6/3/25 | 11:20 | soil | 1 | | | | | | | | X | ✓ | | | |
| BSS-5 | 05 | 6/3/25 | 14:10 | soil | 1 | | | | | | | | X | ✓ | | | |
| BSS-6 | 06 | 6/3/25 | 17:00 | soil | 1 | | | | | | | | X | ✓ | | | |
| BSS-7 | 07 | 6/4/25 | 10:00 | soil | 1 | | | | | | | | X | ✓ | | | |
| BSS-8 | 08 | 6/4/25 | 15:00 | soil | 1 | | | | | | | | X | ✓ | | | |
| BSS-9 | 09 | 6/5/25 | 10:10 | soil | 1 | | | | | | | | X | ✓ | | | |
| BSS-10 | 10 | 6/5/25 | 12:15 | soil | 1 | | | | | | | | X | ✓ | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Gibson Erchul | Haley + Aldrich | 6/6/25 | 14:24 |
| Received by: | Anh Phan | FBI | 6/6/25 | 14:24 |
| Relinquished by: | | Samples received at 2 °C | | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*5500 4th Ave S.*
*Seattle WA 98108*
*(206) 285-8282*
*office@friedmanandbruya.com*

506150

# SAMPLE CHAIN OF CUSTODY 06/06/25 ISM/FI

Page # 2 of 2

Report To See Page 1

Company

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*) Jessica Kapostasy

PROJECT NAME: Kosmos

PO #: 0202832-001

REMARKS: ISM

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☒ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| | | | | | | ANALYSES REQUESTED | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | copper | ISM* | | | Notes |
| BSS-11 | 11 | 6/5/25 | 14:20 | soil | 1 | | | | | | | | X | ✓ | | | |
| BS-FD-1 | 12 | 6/5/25 | 17:00 | soil | 1 | | | | | | | | X | ✓ | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*5500 4th Ave S.*
*Seattle WA 98108*
*(206) 285-8282*
*office@friedmanandbruya.com*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Gibson Burch | Haley + Aldrich | 6/6/25 | 19:24 |
| Received by: | | Anh Pham | FBI | 6/6/25 | 14:24 |
| Relinquished by: | | | Samples received at 2 °C | | |
| Received by: | | | | | |

# SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 506150 CLIENT H&A INITIALS/ DATE: AP 6/6/25

**If custody seals are present on cooler, are they intact?** ☑ NA ☐ YES ☐ NO

**Cooler/Sample temperature** 2 °C
Thermometer ID: Fluke 96312917

**Were samples received on ice/cold packs?** ☑ YES ☐ NO

**How did samples arrive?**
☑ Over the Counter ☐ Picked up by F&BI ☐ FedEx/UPS/GSO

**Is there a Chain-of-Custody* (COC)?** ☑ YES ☐ NO Initials/ AP Date: 6/6/25
*or other representative documents, letters, and/or shipping memos

**Number of days samples have been sitting prior to receipt at laboratory** 1->4 days

**Are the samples clearly identified?** (explain "no" answer below) ☑ YES ☐ NO

**Were all sample containers received intact (i.e. not broken, leaking etc.)?** (explain "no" answer below) ☑ YES ☐ NO

**Were appropriate sample containers used?** ☑ YES ☐ NO ☐ Unknown

**If custody seals are present on samples, are they intact?** ☑ NA ☐ YES ☐ NO

**Are samples requiring no headspace, headspace free?** ☑ NA ☐ YES ☐ NO

**Is the following information provided on the COC, and does it match the sample label?**
(explain "no" answer below)

| | | | |
|---|---|---|---|
| Sample ID's | ☑ Yes ☐ No | label got smear on sample - 02. | ☐ Not on COC/label |
| Date Sampled | ☑ Yes ☐ No | | ☐ Not on COC/label |
| Time Sampled | ☑ Yes ☐ No | | ☐ Not on COC/label |
| # of Containers | ☑ Yes ☐ No | | |
| Relinquished | ☑ Yes ☐ No | | |
| Requested analysis | ☑ Yes ☐ On Hold | | |

**Other comments** (use a separate page if needed)

**Air Samples: Were any additional canisters/tubes received?** ☑ NA ☐ YES ☐ NO

**Number of unused TO15 canisters**** _____ **Number of unused TO17 tubes** _____
**Fill out Green manifolds billing sheet

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Elizabeth Webber-Bruya
Ann Webber-Bruya
Michael Erdahl
Vineta Mills
Eric Young

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

June 24, 2025

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on June 12, 2025 from the Kosmos 0202832-001, F&BI 506255 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data, Andrew Nakahara, Victoria Pehlivan
HNA0624R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 12, 2025 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos 0202832-001, F&BI 506255 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 506255 -01 | BSS-12 |
| 506255 -02 | BSS-13 |
| 506255 -03 | BSS-14 |
| 506255 -04 | BSS-15 |

All quality control requirements were acceptable.

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-12 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/12/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/16/25 | Lab ID: | 506255-01 x2 |
| Date Analyzed: | 06/17/25 | Data File: | 506255-01 x2.105 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 18 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-13 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/12/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/16/25 | Lab ID: | 506255-02 |
| Date Analyzed: | 06/16/25 | Data File: | 506255-02.121 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 15 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-14 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/12/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/16/25 | Lab ID: | 506255-03 x5 |
| Date Analyzed: | 06/16/25 | Data File: | 506255-03 x5.128 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 41 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | BSS-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/12/25 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/16/25 | Lab ID: | 506255-04 x5 |
| Date Analyzed: | 06/16/25 | Data File: | 506255-04 x5.129 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 40 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/16/25 | Lab ID: | I5-512 mb |
| Date Analyzed: | 06/16/25 | Data File: | I5-512 mb.070 |
| Matrix: | Soil | Instrument: | ICPMS3 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | <5 |

Date of Report: 06/24/25
Date Received: 06/12/25
Project: Kosmos 0202832-001, F&BI 506255

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 506276-19 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Copper | mg/kg (ppm) | 50 | 7.48 | 85 | 84 | 75-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Copper | mg/kg (ppm) | 50 | 101 | 80-120 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported between the method detection limit and the lowest calibration point. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

ANGIE GOODWIN: agoodwin@haleyaldrich.com
ANDREW NAKAHARA: anakahara@haleyaldrich.com
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# SAMPLE CHAIN OF CUSTODY

06/12/25 ISM/FI

Page # 1 of 1

Report To

Company HALEY & ALDRICH 506255

Address 3131 ELLIOTT AVE, SUITE 600

City, State, ZIP SEATTLE, WA 98121

Phone 206-828-4586 Email

SAMPLERS (*signature*) S Fisher

PROJECT NAME: KOSMOS

PO #: 0202832-001

REMARKS: ISM

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | Cu | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BSS-12 | 01 | 6/11/25 | 13:00 | SOIL | 1 | | | | | | | | X | | | | |
| BSS-13 | 02 | 6/11/25 | 14:10 | SOIL | 1 | | | | | | | | X | | | | |
| BSS-14 | 03 | 6/11/25 | 16:20 | SOIL | 1 | | | | | | | | X | | | | |
| BSS-15 | 04 | 6/11/25 | 17:15 | SOIL | 1 | | | | | | | | X | | | | |
| | | | | SOIL | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

ANALYSES REQUESTED

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: S Fisher | S. FISHER | HALEY & ALDRICH | 6/12/25 | 17:08 |
| Received by: | Anh Phan | FBI | 6/12/25 | 17:08 |
| Relinquished by: | | Samples received at 2 oC | | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*5500 4th Ave S.*
*Seattle WA 98108*
*(206) 285-8282*
*office@friedmanandbruya.com*

# SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 506255 CLIENT H&A INITIALS/ AP DATE: 6/12/25

**If custody seals are present on cooler, are they intact?** ☑ NA ☐ YES ☐ NO

**Cooler/Sample temperature** 2 °C
Thermometer ID: Fluke 96312917

**Were samples received on ice/cold packs?** ☑ YES ☐ NO

**How did samples arrive?**
☑ Over the Counter ☐ Picked up by F&BI ☐ FedEx/UPS/GSO

**Is there a Chain-of-Custody* (COC)?** ☑ YES ☐ NO Initials/ AP Date: 6/13/25
*or other representative documents, letters, and/or shipping memos

**Number of days samples have been sitting prior to receipt at laboratory** 1 days

**Are the samples clearly identified?** (explain "no" answer below) ☑ YES ☐ NO

**Were all sample containers received intact (i.e. not broken, leaking etc.)?** (explain "no" answer below) ☑ YES ☐ NO

**Were appropriate sample containers used?** ☑ YES ☐ NO ☐ Unknown

**If custody seals are present on samples, are they intact?** ☑ NA ☐ YES ☐ NO

**Are samples requiring no headspace, headspace free?** ☑ NA ☐ YES ☐ NO

**Is the following information provided on the COC, and does it match the sample label?**
(explain "no" answer below)

| | | |
|---|---|---|
| Sample ID's | ☑ Yes ☐ No | ☐ Not on COC/label |
| Date Sampled | ☑ Yes ☐ No | ☐ Not on COC/label |
| Time Sampled | ☑ Yes ☐ No | ☐ Not on COC/label |
| # of Containers | ☑ Yes ☐ No | |
| Relinquished | ☑ Yes ☐ No | |
| Requested analysis | ☑ Yes ☐ On Hold | |

**Other comments** (use a separate page if needed)

**Air Samples: Were any additional canisters/tubes received?** ☑ NA ☐ YES ☐ NO

**Number of unused TO15 canisters**** _____ **Number of unused TO17 tubes** _____
**Fill out Green manifolds billing sheet

# APPENDIX F
# Data User Summary Report and Laboratory Reports

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

# Data Usability Summary Report

**Project Name: Kosmos Mill**

**Project Description: Soil Samples**

**Sample Date(s): 27 April through 27 June 2022**

**Analytical Laboratory: Eurofins Seattle – Tacoma, WA;**

**Eurofins Lancaster Laboratories Environment Testing, LLC, – Lancaster, PA**

**Friedman & Bruya, Inc – Seattle, WA**

**Fremont Analytical – Seattle, WA**

**OnSite Environmental Inc. – Redmond, WA**

**Validation Performed by: Sean Fischer**

**Validation Reviewed by: Eric Hitchens**

**Validation Date: 23 August 2022**

---

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the analytical results for Sample Delivery Group(s) (SDG) listed. This DUSR is organized into the following sections:

1. **Sample Delivery Group Number 510-113209-1 (Eurofins TestAmerica)**
2. **Sample Delivery Group Number 206500 (Friedman & Bruya, Inc.)**
3. **Precision and Accuracy [for SDG(s) above]**
4. **Explanations**
5. **Glossary**
6. **Abbreviations**
7. **Qualifiers**

**References**

This data validation and usability assessment was performed per the guidance and requirements established by the United States Environmental Protection Agency (USEPA) using the following reference materials:

- National Functional Guidelines (NFG) for Inorganic Data Review.
- National Functional Guidelines (NFG) for Organic Data Review.
- The project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section).

Data reported in this sampling event were reported to the laboratory reporting limit (RL). Results found between the laboratory detection limit (MDL) and RL are flagged J as estimated.

Sample data were qualified in accordance with the laboratory's standard operating procedures (SOP). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

# 1. Sample Delivery Group Number 510-113209-1 (Eurofins TestAmerica)

## 1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 510-113209-1, dated 25 May 2022. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- Sample SS-7-S1-0.5 (580-113209-2) was placed on hold on 29 April 2022.
- Method SW7196A subcontracted to Eurofins Lancaster Laboratories Environment Testing, LLC, Lancaster, PA.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| SS-1-S1-0.5 | N | 580-113209-1 | 04/27/2022 | SE | A, B, C, D, E, F, G, H |
| SS-7-R-S1-0.5 | N | 580-113209-3 | 04/27/2022 | SE | A, B, C, D, E, F, G, H |
| SS-4-S1-0.5 | N | 580-113209-4 | 04/27/2022 | SE | A, B, C, D, E, F, G, H |
| SS-8-S1-0.5 | N | 580-113209-5 | 04/27/2022 | SE | A, B, C, D, E, F, G, H |
| SS-11-S1-0.5 | N | 580-113209-6 | 04/27/2022 | SE | A, B, C, D, E, F, G, H |

| Method Holding Times | | | |
|---|---|---|---|
| A. | NWTPH-DX | Diesel- and Oil-range Petroleum Hydrocarbons | 14 days/40 days* |
| B. | NWTPH-GX | Gasoline-range Hydrocarbons | 14 days for solids |
| C. | SW6020B | Metals | 180 days for solids |
| D. | SW7196A** | Trivalent and Hexavalent Chromium | 30 days/7 days |
| E. | SW7471A | Mercury | 28 days |
| F. | SW8260D | Volatile Organic Compounds (VOCs) | 14 days |
| G. | SW8270ESIM | Polycyclic Aromatic Hydrocarbons (PAHs) | 14 days/40 days |
| H. | SW9060 | Total Organic Carbon - Average | 28 days |

***# days/# days notation indicates the holding time is # days for extraction and then an additional # days for analysis.***
*****Method subcontracted to Eurofins Lancaster Laboratories Environment Testing, LLC, Lancaster, PA.***

## 1.2 CASE NARRATIVE

The laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since these additional quality control issues were not required for the project's data quality objectives, these quality control issues were not reviewed.

- VOA Prep, Method 5035: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: SS-1-S1-0.5 (580-113209-1) and SS-8-S1-0.5 (580-113209-5). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 5 grams. The amount provided was below this range. No qualifiers applied.

- VOA Prep, Method 5035: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: SS-7-R-S1-0.5 (580-113209-3) and SS-8-S1-0.5 (580-113209-5). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 10 grams. The amount provided was below this range. No qualifiers applied.
- VOA Prep, Method 5035: The following sample was provided to the laboratory with a significantly different initial weight than that required by the reference method: SS-8-S1-0.5 (580-113209-5). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 5 grams. The amount provided was above this range. No qualifiers applied.
- VOA Prep, Method 5035: The following sample was provided to the laboratory with a significantly different initial weight than that required by the reference method: SS-11-S1-0.5 (580-113209-6). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 5 grams. The amount provided was above this range. No qualifiers applied.

### 1.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol with the following exceptions:

- Method 8260D: Multiple analytes failed low for the LCSD associated with prep batch 389935 and analytical batch 390212. The LCS met the acceptance criteria. The associated samples were reanalyzed outside of holding time and both sets of data have been reported. In addition, the RPD was outside of control limits for multiple analytes. SS-1-S1-0.5 (580-113209-1), SS-7-R-S1-0.5 (580-113209-3), SS-4-S1-0.5 (580-113209-4), SS-8-S1-0.5 (580-113209-5), SS-11-S1-0.5 (580-113209-6) and (LCSD 580-389935/3-A). The validator chose the results that were within holding time and rejected the alternative results.

### 1.4 REPORTING LIMITS AND SAMPLE DILUTIONS

The RLs for the samples within this SDG met or were below the minimum reporting limit (RL) requirements specified by the project specific QAPP, except where diluted due to matrix effects or non-target analytes.

### 1.5 REPORTING BASIS (WET/DRY)

Refer to section E 1.1. Sediment data in this SDG were reported on a dry weight basis with the exception of total organic carbon.

Where reported, percent solid results or percent moisture were reviewed and found to be within limits.

### 1.6 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified quality control (QC) limits, with exceptions listed in Table F-1.

### 1.7 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses exhibited recoveries and relative percent differences (RPDs) within the specified limits, with exceptions listed in Table F-2.

### 1.8 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) used for matrix spike/matrix spike duplicates (MS/MSD) are listed in Table F-3.

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits.

### 1.9 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

### 1.10 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The sample(s) used for laboratory duplicate analysis are listed in Table F-5.

The RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL), with exceptions listed in Table E-6.

No field duplicates were collected in this data set.

### 1.11 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable except for the rejected data noted. A summary of qualifiers applied to this data set is shown in Table F-9.

# 2. Sample Delivery Group Number 206500 (Friedman & Bruya, Inc.)

## 2.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 206500, dated 21 July 2022. Sample IDs MW-4S-S2, MW-4S-S4, MW-3S-S1, MW-3S-S2, MW-3S-S3, MW-3S-S200, MW-2S-S2, MW-2S-S3, MW-1S-S2, and MW-1S-S3 were sent to Fremont Analytical for hexavalent chromium and EPH analyses (subcontracted SDG number 2207039). In addition, these samples were sent to Onsite Environmental Inc. for VPH analysis (subcontracted SDG number 2207-016). Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- Custody seals were not used when samples were dropped off at the laboratory or service center by the field staff, submitted to a laboratory-provided courier, or when transported between subcontracted laboratories.
- Sample ID MW-2S-S3 (Lab ID 206500-12) was logged incorrectly in the Friedman & Bruya Report but was logged correctly in the sub-contracted reports. No qualifiers applied.
- Sample ID MW-2S-S1 was marked for analysis by method SW8021B on the COC for Friedman and Bruya, Inc., but the lab did not conduct this analysis on the sample. Sample MW-2S-S2 was not marked for analysis by SW8021B on the COC for Friedman and Bruya, Inc., but the lab did run this analysis on the sample. Sample MW-2S-S2 was also analyzed by method SW8021B at Onsite Environmental Inc. per the COC. No qualifiers applied.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| MW-4S-S1 | N | 206500-01 | 06/27/2022 | SO | A, B, C |
| MW-4S-S2 | N | 206500-02 | 06/27/2022 | SO | A, B, D, E, F, G |
| MW-4S-S3 | N | 206500-03 | 06/27/2022 | SO | A, B, C |
| MW-4S-S4 | N | 206500-04 | 06/27/2022 | SO | A, B, D, E, F, G |
| MW-3S-S1 | N | 206500-05 | 06/27/2022 | SO | A, B, D, E, F, G |
| MW-3S-S2 | N | 206500-06 | 06/27/2022 | SO | A, B, D, E, F, G |
| MW-3S-S3 | N | 206500-07 | 06/27/2022 | SO | A, B, D, E, F, G |
| MW-3S-S200 | FD | 206500-08 | 06/27/2022 | SO | A, B, D, E, F, G |
| MW-3S-S4 | N | 206500-09 | 06/27/2022 | SO | A, B, C |
| MW-2S-S1 | N | 206500-10 | 06/27/2022 | SO | A, B |
| MW-2S-S2 | N | 206500-11 | 06/27/2022 | SO | A, B, C, D, E, F, G |
| MW-2S-S3 | N | 206500-12 | 06/27/2022 | SO | A, B, D, E, F, G |
| MW-2S-S4 | N | 206500-13 | 06/27/2022 | SO | A, B, C |
| MW-1S-S1 | N | 206500-14 | 06/27/2022 | SO | A, B, C |
| MW-1S-S2 | N | 206500-15 | 06/27/2022 | SO | A, B, D, E, F, G |
| MW-1S-S3 | N | 206500-16 | 06/27/2022 | SO | A, B, D, E, F, G |
| MW-1S-S4 | N | 206500-17 | 06/27/2022 | SO | A, B, C |
| MW-4S-S2 | N | 2207039-001 | 06/27/2022 | SO | H, I |

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| MW-4S-S4 | N | 2207039-002 | 06/27/2022 | SO | H, I |
| MW-3S-S1 | N | 2207039-003 | 06/27/2022 | SO | H, I |
| MW-3S-S2 | N | 2207039-004 | 06/27/2022 | SO | H, I |
| MW-3S-S3 | N | 2207039-005 | 06/27/2022 | SO | H, I |
| MW-3S-S200 | FD | 2207039-006 | 06/27/2022 | SO | H, I |
| MW-2S-S2 | N | 2207039-007 | 06/27/2022 | SO | H, I |
| MW-2S-S3 | N | 2207039-008 | 06/27/2022 | SO | H, I |
| MW-1S-S2 | N | 2207039-009 | 06/27/2022 | SO | H, I |
| MW-1S-S3 | N | 2207039-010 | 06/27/2022 | SO | H, I |
| MW-4S-S2 | N | 07-016-01 | 06/27/2022 | SO | C, J |
| MW-4S-S4 | N | 07-016-02 | 06/27/2022 | SO | C, J |
| MW-3S-S1 | N | 07-016-03 | 06/27/2022 | SO | C, J |
| MW-3S-S2 | N | 07-016-04 | 06/27/2022 | SO | C, J |
| MW-3S-S3 | N | 07-016-05 | 06/27/2022 | SO | C, J |
| MW-3S-S200 | FD | 07-016-06 | 06/27/2022 | SO | C, J |
| MW-2S-S2 | N | 07-016-07 | 06/27/2022 | SO | C, J |
| MW-2S-S3 | N | 07-016-08 | 06/27/2022 | SO | C, J |
| MW-1S-S2 | N | 07-016-09 | 06/27/2022 | SO | C, J |
| MW-1S-S3 | N | 07-016-10 | 06/27/2022 | SO | C, J |

| Method Holding Times | | | |
|---|---|---|---|
| A. | NWTPH-DX | Diesel- and Oil-range Petroleum Hydrocarbons | 14 days/40 days* |
| B. | NWTPH-GX | Gasoline-range Petroleum Hydrocarbons | 14 days |
| C. | SW8021B | BTEX Volatile Organic Compounds (VOCs) | 14 days |
| D. | E1631E | Mercury | 28 days |
| E. | SW6020 | Metals | 180 days |
| F. | SW8260D | Volatile Organic Compounds (VOCs) | 14 days |
| G. | SW8270E | Polycyclic Aromatic Hydrocarbons (PAHs) | 14 days/40 days |
| H. | NWTPH-EPH | Extractable Petroleum Hydrocarbons | 14 days/40 days |
| I. | SW7196 | Hexavalent Chromium | 30 days/7days |
| J. | NWTPH-VPH | Volatile Petroleum Hydrocarbons | 14 days |

***# days/# days notation indicates the holding time is # days for extraction and then an additional # days for analysis.***

## 2.2 CASE NARRATIVE

The laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since these additional quality control issues were not required for the project's data quality objectives, these quality control issues were not reviewed.

- SDG 206500: Methylene chloride was detected in the 8260D analysis of several samples. The data were flagged as due to laboratory contamination and the detections were flagged "LC" due to do suspected laboratory contamination.
- SDG 206500: For sample ID MW-3S-S200, the analyte response for 1-Methylnaphthalene and Phenanthrene exceeded the valid instrument calibration range. The value reported was an

estimate and the affected data were flagged accordingly. The two analytes were reanalyzed, and the analyte response was within calibration range. The validator chose the re-analysis results and rejected the alternative results.

- SDG 206500: The calibration results for acetone were outside of acceptance criteria. The value reported was an estimate and the affected data were flagged accordingly. However, as no acetone was detected in the method blank, qualification was not necessary.

## 2.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

- For method NWTPH-EPH, Fremont Analytical did not provide sample prep times. Therefore, an assessment of holding time could not be performed. No qualifiers applied.

## 2.4 REPORTING LIMITS AND SAMPLE DILUTIONS

The RLs for the samples within this SDG met or were below the minimum reporting limit (RL) requirements specified by the project specific QAPP except where diluted due diluted due to matrix effects or non-target analytes.

## 2.5 REPORTING BASIS (WET/DRY)

Refer to section E 1.1. Soil data in this SDG were reported on a dry weight basis

Where reported, percent moisture was reviewed and found to be within limits.

## 2.6 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified quality control (QC) limits, with exceptions listed in Table F-1.

## 2.7 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses exhibited recoveries and relative percent differences (RPDs) within the specified limits.

## 2.8 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) used for matrix spike/matrix spike duplicates (MS/MSD) are listed in Table F-3.

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits, with exceptions listed in Table F-4.

## 2.9 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

## 2.10 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The sample(s) used for laboratory duplicate analysis are listed in Table F-5.

The RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL), with exceptions listed in Table F-6.

The sample(s) used for field duplicate analysis are listed in Table F-7. RPDs were all below 50 percent for soil (or the absolute difference rule was satisfied if detects were less than 5 times the RL). Any exceptions are noted in Table F-8 and qualified.

## 2.11 SUSPECTED LABORATORY CONTAMINATION

Methylene chloride was detected in several samples, however the detections were flagged “LC” due to do suspected laboratory contamination (methylene chloride is frequently used for cleaning equipment in the laboratory).

## 2.12 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable except for the rejected data noted. A summary of qualifiers applied to this data set is shown in Table F-9.

## 3. Precision and Accuracy [for SDG(s) above]

Refer to section E 1.7. Where required by the method, some measurement of analytical accuracy and precision was reported for each method with the site samples.

## 4. Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.1 Reporting Basis (Wet/Dry)
  - Soil samples can be reported on either a wet (as received) or dry weight basis. Dry weight data indicate calculations were made to compensate for the moisture content of the soil sample.
  - Percent (%) solids should be appropriately considered when evaluating analytical results for non-aqueous samples. Sediments with high moisture content may or may not be successfully analyzed by routine analytical methods. Samples should have greater than or equal to 30 percent solids to be appropriately quantified.
- E 1.2 Surrogate Recovery Compliance
  - Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to sample preparation to determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds.
- E 1.3 Laboratory Control Samples
  - The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
  - Field blanks are prepared to identify contamination that may have been introduced during field activity. Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. Trip blanks are prepared when volatile analysis is requested to identify contamination that may have been introduced during transport.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.

- The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The relative percent difference (RPD) or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.

- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the relative percent difference (%RPD) found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.
  - Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the percent recovery (%Rec) of certain spiked compounds. This can be assessed using LCS, BS, MS, and/or surrogate recoveries.

# 5. Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg microgram per kilogram
  - µg/L microgram per liter
  - µg/m3 microgram per cubic meter
  - mg/kg milligram per kilogram
  - mg/L milligram per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - WQ Water Quality control matrix
  - WS Surface Water
- Table Footnotes:
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Common Symbols:
  - % percent
  - < less than
  - ≤ less than or equal to
  - > greater than
  - ≥ greater than or equal to
  - = equal
  - °C degrees Celsius
  - ± plus or minus
  - ~ approximately
  - x times (multiplier)

# 6. Abbreviations

| | |
|---|---|
| %D | Percent Difference |
| %R | Percent Recovery |
| %RSD | Percent Relative Standard Deviation |
| %v/v | Percent volume by volume |
| µg/L | micrograms per liter |
| 2s | 2 sigma |
| 4,4-DDT | 4 4-dichlorodiphenyltrichloroethane |
| Abs Diff | Absolute Difference |
| BPJ | Best Professional Judgement |
| BS | Blank Spike |
| CCB | Continuing Calibration Blank |
| CCV | Continuing Calibration Verification |
| CCVL | Continuing Calibration Verification Low |
| COC | Chain of Custody |
| COM | Combined Isotope Calculation |
| Cr (VI) | Hexavalent Chromium |
| CRI | Collision Reaction Interface |
| DoD | Department of Defense |
| DUSR | Data Usability Summary Report |
| EMPC | Estimated Maximum Possible Concentration |
| FBK | Field Blank Contamination |
| FDP | Field Duplicate |
| GC | Gas Chromatograph |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| GPC | Gel Permeation Chromatography |
| H2 | Hydrogen gas |
| HCl | Hydrochloric Acid |
| ICAL | Initial Calibration |
| ICB | Initial Calibration Blank |
| ICP/MS | Inductively Coupled Plasma/ Mass Spectrometry |
| ICV | Initial Calibration Verification |
| ICVL | Initial Calibration Verification Low |
| IPA | Isopropyl Alcohol |
| LC | Laboratory Control |
| LCS/LCSD | Laboratory Control Sample/Laboratory Control Sample Duplicate |
| MBK | Method Blank Contamination |
| MDC | Minimum Detectable Concentration |
| MDL | Laboratory Method Detection Limit |
| mg/kg | milligrams per kilogram |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | not applicable |
| ND | Non-Detect |
| NFG | National Functional Guidelines |
| $NH_3$ | Ammonia |
| NYSDEC | New York State Department of Environmental Conservation |
| PAH | polycyclic aromatic hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PDS | Post Digestion Spike |
| PEM | Performance Evaluation Mixture |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFBA | Perfluorbutanoic Acid |
| PFD | Perfluorodecalin |
| PFOA | Perfluorooctanoic Acid |
| PFOS | Perfluorooctanoic Acid |
| PFPeA | nonafluorovaleric acid |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QSM | Quality Systems Manual |
| $R^2$ | R-squared value |
| Ra-226 | Radium-226 |
| Ra-228 | Radium-228 |
| RESC | Resolution Check Measure |
| RL | Laboratory Reporting Limit |
| RPD | Relative Percent Difference |
| RRF | Relative Response Factors |
| RT | Retention Time |
| SAP | sampling analysis plan |
| SDG | Sample Delivery Group |
| SIM | Selected ion monitoring |
| SOP | Laboratory Standard Operating Procedures |
| SPE | Solid Phase Extraction |
| SVOC | Semi-Volatile Organic Compounds |
| TIC | Tentatively Identified Compound |
| TKN | Total Kjeldahl Nitrogen |
| TPH | Total Petroleum Hydrocarbon |
| TPU | Total Propagated Uncertainty |
| u | atomic mass unit |
| USEPA | U.S. Environmental Protection Agency |
| VOC | Volatile Organic Compounds |
| WP | Work Plan |

# 7. Qualifiers

The qualifiers below are from the USEPA National Functional Guidelines and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:

  U The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".

  B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers:

  E The compound was quantitated above the calibration range.

  D The concentration is based on a diluted sample analysis.

- Validation Qualifiers:

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  J/UJ as listed in exception tables J applies to detected data and UJ applies to non-detected data as reported by the laboratory.

  UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

  NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.

  R The sample results were rejected as unusable; the compound may or may not be present in the sample.

  S Result is suspect. See DUSR for details.

## References


1. Haley & Aldrich, Inc, 2021. Quality Assurance Project Plan. Remedial Investigation Work Plan. Kosmos Mill Oil Cleanup. Site Code: 19499-02. Seattle Washington. December 2021.
2. United States Environmental Protection Agency, 2020a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-542-R-20-006. November 2020.
3. United States Environmental Protection Agency, 2020b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-20-005. November 2020.

**TABLE F-1 SURROGATES**
KOSMOS MILL MORTON,
WASHINGTON

| SDG# | Method | Test Batch | Sample ID | Lab ID | Surrogate | Dilution | %R | Qualification |
|---|---|---|---|---|---|---|---|---|
| 580-113209-1 | SW8260D | 390936 | SS-1-S1-0.5 | 580-113209-1 | 1,2-Dichloroethane-d4 | 1x | 147% | None, samples are ND |
| | | | | | 4-Bromofluorobenzene | 1x | 77% | J-/UJ target compounds* |
| | | | SS-7-R-S1-0.5 | 580-113209-3 | 1,2-Dichloroethane-d4 | 1x | 176% | None, samples are ND |
| | | | | | 4-Bromofluorobenzene | 1x | 79% | J-/UJ target compounds* |
| | | | SS-4-S1-0.5 | 580-113209-4 | 1,2-Dichloroethane-d4 | 1x | 160% | None, samples are ND |
| | | | | | 4-Bromofluorobenzene | 1x | 78% | J-/UJ target compounds* |
| | | | SS-8-S1-0.5 | 580-113209-5 | 1,2-Dichloroethane-d4 | 1x | 154% | None, samples are ND |
| | | | | | 4-Bromofluorobenzene | 1x | 70% | J-/UJ target compounds* |
| | | | SS-11-S1-0.5 | 580-113209-6 | 1,2-Dichloroethane-d4 | 1x | 157% | None, samples are ND |
| | | | | | 4-Bromofluorobenzene | 1x | 74% | J-/UJ target compounds* |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | Nitrobenzene-d5 | NA | 121% | None, sample is ND |

***Notes:***

**These qualifiers were not applied to the data as the re-analysis result was rejected in favor of the original analysis which had acceptable surrogate recovery.*

**TABLE F-2**
**LCS/LCSD**
KOSMOS MILL
MORTON, WASHINGTON

| SDG # | Sample Type | Method | Batch ID | Analyte | %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|---|
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,1,1,2-Tetrachloroethane | 71%, RRD = 21 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,1,1-Trichloroethane | 61%, RPD = 30 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,1,2-Trichloroethane | RPD = 22 | J/None | None, samples are ND |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,1-Dichloroethane | 77%, RPD = 22 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,1-Dichloroethene | 67%, RPD = 35 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,1-Dichloropropene | 64%, RPD = 23 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,2,4-Trimethylbenzene | 71%, RPD = 31 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,2-Dichlorobenzene | RPD = 24 | J/None | None, samples are ND |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,2-Dichloropropane | RPD = 32 | J/None | None, samples are ND |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,3,5-Trimethylbenzene | 71%, RPD = 29 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,3-Dichlorobenzene | 72%, RPD = 31 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,3-Dichloropropane | RPD = 22 | J/None | None, samples are ND |
| 580-113209-1 | LCSD | SW8260D | 390212 | 1,4-Dichlorobenzene | 73%, RPD = 25 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 2,2-Dichloropropane | 68%, RPD = 30 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 2-Chlorotoluene | 71%, RPD = 33 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | 4-Chlorotoluene | RPD = 31 | J/None | None, samples are ND |
| 580-113209-1 | LCSD | SW8260D | 390212 | Benzene | 69%, RPD = 26 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Bromobenzene | RPD = 27 | J/None | None, samples are ND |
| 580-113209-1 | LCSD | SW8260D | 390212 | Bromodichloromethane | 72%, RPD = 25 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Carbon tetrachloride | 66%, RPD = 32 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Chlorobenzene | 74%, RPD = 24 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | cis-1,2-Dichloroethene | RPD = 21 | J/None | None, samples are ND |
| 580-113209-1 | LCSD | SW8260D | 390212 | cis-1,3-Dichloropropene | 71%, RPD = 22 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Cymene (p-Isopropyltoluene) | 70%, RPD = 31 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Ethylbenzene | 65%, RPD = 31 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Isopropylbenzene | 64%, RPD = 25 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Methylene Chloride | 46%, RPD = 25 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | m-Xylene & p-Xylene | 66%, RPD = 29 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | n-Butylbenzene | 68% | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | N-Propylbenzene | 69%, RPD = 34 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | o-Xylene | 67%, RPD = 25 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | sec-Butylbenzene | 67%, RPD 31 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Styrene | 71%, RPD = 24 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | t-Butylbenzene | 71%, RPD = 28 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Tetrachloroethene | 62%, RPD = 41 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Toluene | 61%, RPD = 34 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | trans-1,2-Dichloroethene | 75%, RPD = 23 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | trans-1,3-Dichloropropene | 73% | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCSD | SW8260D | 390212 | Trichloroethene | 72%, RPD = 29 | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1 |
| 580-113209-1 | LCS/LCSD | SW8260D | 390936 | Various | Various > %R | J/None | None, samples are ND |
| 580-113209-1 | LCS/LCSD | SW8260D | 390937 | Bromomethane | 52%/ 46% | J/UJ | SS-1-S1, SS-7-R-S1, SS-4-S1, SS-8-S1, SS-11-S1* |

***Notes:***
** These qualifiers were not applied to the data as the re-analysis result was rejected in favor of the original analysis*

**TABLE F-3**
**MS/MSD PAIRS**
KOSMOS MILL
MORTON, WASHINGTON

| SDG# | Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method(s) |
|---|---|---|---|
| 580-113209-1 | 580-113209-1 MS/MSD | SS-1-S1-0.5 | SW7471A, SW8270ESIM |
| 580-113209-1 | 580-113209-3 MSI/MSS | SS-7-R-S1-0.5 | SW7196A |
| 580-113209-1 | 580-113209-3 MS/MSD | SS-7-R-S1-0.5 | SW9060 |
| 206500 | 206500-10 | MW-2S-S1 | NWTPH-DX |
| 206500 | 206500-02 | MW-4S-S2 | SW6020, E1631E |
| 2207039 | 2207039-001AMS | MW-4S-S2 | NWTPH-EPH |
| 2207039 | 2207039-008AMS | MW-2S-S3 | SW7196 |

**TABLE F-4**
**MS/MSD**
KOSMOS MILL
MORTON, WASHINGTON

| SDG# | Sample Type | Method | Parent Sample | Analyte | %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|---|
| 206500 | MS | SW6020 | MW-4S-S2 | Arsenic | 71% | J-/UJ | MW-1S-S2, MW-1S-S3, MW-2S-S2, MW-2S-S3, MW-3S-S1, MW-3S-S2, MW-3S-S200, MW-3S-S3, MW-4S-S2, MW-4S-S4 |
| 206501 | MS | SW6020 | MW-4S-S2 | Silver | 72% | J-/UJ | MW-1S-S2, MW-1S-S3, MW-2S-S2, MW-2S-S3, MW-3S-S1, MW-3S-S2, MW-3S-S200, MW-3S-S3, MW-4S-S2, MW-4S-S4 |
| 206502 | MS/MSD | SW6020 | MW-4S-S2 | Zinc | 55%, RPD = 56 | J-/UJ | MW-1S-S2, MW-1S-S3, MW-2S-S2, MW-2S-S3, MW-3S-S1, MW-3S-S2, MW-3S-S200, MW-3S-S3, MW-4S-S2, MW-4S-S4 |

**TABLE F-5**
**LABORATORY DUPLICATE PAIRS**
KOSMOS MILL
MORTON, WASHINGTON

| SDG# | Lab Sample Number | Laboratory Duplicate Sample Client ID | Method(s) |
|---|---|---|---|
| 580-113209-1 | 580-113209-1 DU | SS-1-S1-0.5 | SW7471A |
| 580-113209-1 | 580-113209-3 DU | SS-7-R-S1-0.5 | SW7196A, SW9060 |
| 580-113209-1 | 580-113209-5 DU | SS-8-S1-0.5 | NWTPH-DX |
| 580-113209-1 | 580-113209-6 DU | SS-11-S1-0.5 | NWTPH-DX |
| 206500 | 206500-01 | MW-4S-S1 | NWTPH-GX, SW8021B |
| 2207039 | 2207039-007ADUP | MW-2S-S2 | NWTPH-EPH |
| 2207040 | 2207039-008ADUP | MW-2S-S3 | SW7176 |

**TABLE F-6**
**LABORATORY DUPLICATE EXCEEDANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG# | Lab Sample Number | Laboratory Duplicate Sample Client ID | Method(s)/Analyte | % RPD | Qualification |
|---|---|---|---|---|---|
| 580-113209-1 | 580-113209-3 DU | SS-7-R-S1-0.5 | SW9060 / Total Organic Carbon Average Duplicates | 37% | J/UJ, RPD > 20% |
| 2207039 | 2207039-008ADUP | MW-2S-S3 | SW7176 / Hexavalent Chromium | NA | J/UJ, Abs Diff > RL |

**TABLE F-7**
**PRIMARY AND FIELD DUPLICATE**
KOSMOS MILL
MORTON, WASHINGTON

| Primary Sample ID | Duplicate Sample ID | Method(s) |
|---|---|---|
| MW-3S-S2 | MW-3S-S200 | NWTPH-DX, NWTPH-GX, SW8021B, E1631E, SW6020, SW8260D, SW8270E, NWTPH-EPH, SW7196, NWTPH-VPH |

**TABLE F-8**
**FIELD DUPLICATES**
KOSMOS MILL
MORTON, WASHINGTON

**Field Duplicate RPD Calculations :**

| Method(s): NWTPH-DX, NWTPH-EPH, NWTPH-GX, NWTPH-VPH, SW7196, SW8021B, SW8260D, SW8270E | | | | |
|---|---|---|---|---|
| **Analyte** | **Primary Sample ID** | **Duplicate Sample ID** | **% RPD** | **Qualification** |
| **(mg/kg)** | **MW-3S-S2** | **MW-3S-S200** | | |
| Total Petroleum Hydrocarbons (C10-C28) DRO | **310** | **1100** | 112 | J/UJ, RPD > 50% |
| Total Petroleum Hydrocarbons (C21-C34) Aliphatic | **55.2** | **40.9** | NA | J/UJ, Abs Diff > RL |
| Gasoline Range Organics | **16** | **50** | NA | J/UJ, Abs Diff > RL |
| Total Petroleum Hydrocarbons (C10-C12) Aromatic | **6.7** | **73** | NA | J/UJ, Abs Diff > RL |
| Total Petroleum Hydrocarbons (C12-C13) Aromatic | **74** | **470** | 146 | J/UJ, RPD > 50% |
| Total Petroleum Hydrocarbons (C6-C8) Aliphatic | 5 U | **24** | NA | J/UJ, Abs Diff > RL |
| Total Petroleum Hydrocarbons (C8-C10) Aliphatic | 5 U | **27** | NA | J/UJ, Abs Diff > RL |
| Total Petroleum Hydrocarbons (C8-C10) Aromatic | 5 U | **20** | NA | J/UJ, Abs Diff > RL |
| Chromium VI (Hexavalent) | **1.34** | **3.19** | NA | J/UJ, Abs Diff > RL |
| m,p-Xylenes (SW8021B) | 0.06 U | **0.17** | NA | J/UJ, Abs Diff > RL |
| Ethylbenzene | **0.0041** | **0.0024** | NA | J/UJ, Abs Diff > RL |
| Toluene | **0.0037** | **0.0022** | NA | J/UJ, Abs Diff > RL |
| m,p-Xylenes (SW8260D) | **0.015** | **0.0096** | NA | J/UJ, Abs Diff > RL |
| o-Xylene | **0.027** | **0.016** | 51 | J/UJ, RPD > 50% |
| Pyrene | **0.038** | **0.11** | 97 | J/UJ, RPD > 50% |
| Chrysene | **0.01** | **0.034** | 109 | J/UJ, RPD > 50% |
| Benzo(a)anthracene | **0.0035** | **0.012** | NA | J/UJ, Abs Diff > RL |
| Acenaphthene | **0.047** | 0.002 U | NA | J/UJ, Abs Diff > RL |
| Phenanthrene | **0.44** | **1.6** | 114 | J/UJ, RPD > 50% |
| Fluorene | **0.23** | **0.89** | 118 | J/UJ, RPD > 50% |
| 1-Methylnaphthalene | **0.36** | **1.8** | 133 | J/UJ, RPD > 50% |
| 2-Methylnaphthalene | **0.13** | **0.89** | 149 | J/UJ, RPD > 50% |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW9060 | Wet | SS-7-R-S1-0.5 | 580-113209-3 | TOC Average Duplicates | 10000 | 10000 J | DUP |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1,1,2-Tetrachloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1,1-Trichloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1-Dichloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1-Dichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,2,4-Trimethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,3,5-Trimethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,3-Dichlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,4-Dichlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 2,2-Dichloropropane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 2-Chlorotoluene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 2-Phenylbutane (sec-Butylbenzene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Benzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Bromodichloromethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Carbon tetrachloride | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Chlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Cymene (p-Isopropyltoluene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Ethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Isopropylbenzene (Cumene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Methylene chloride (Dichloromethane) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Styrene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Tetrachloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Toluene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Trichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | cis-1,3-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | m,p-Xylenes | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | n-Butylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | n-Propylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | o-Xylene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | tert-Butylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | trans-1,2-Dichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | trans-1,3-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1,1,2-Tetrachloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1,1-Trichloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1-Dichloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1-Dichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,2,4-Trimethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,3,5-Trimethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,3-Dichlorobenzene | U | UJ | LCS |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,4-Dichlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 2,2-Dichloropropane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 2-Chlorotoluene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 2-Phenylbutane (sec-Butylbenzene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Benzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Bromodichloromethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Carbon tetrachloride | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Chlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Cymene (p-Isopropyltoluene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Ethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Isopropylbenzene (Cumene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Methylene chloride (Dichloromethane) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Styrene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Tetrachloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Toluene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Trichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | cis-1,3-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | m,p-Xylenes | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | n-Butylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | n-Propylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | o-Xylene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | tert-Butylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | trans-1,2-Dichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | trans-1,3-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1,1,2-Tetrachloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1,1-Trichloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1-Dichloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1-Dichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,2,4-Trimethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,3,5-Trimethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,3-Dichlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,4-Dichlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 2,2-Dichloropropane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 2-Chlorotoluene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 2-Phenylbutane (sec-Butylbenzene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Benzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Bromodichloromethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Carbon tetrachloride | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Chlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Cymene (p-Isopropyltoluene) | U | UJ | LCS |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Ethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Isopropylbenzene (Cumene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Methylene chloride (Dichloromethane) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Styrene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Tetrachloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Toluene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Trichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | cis-1,3-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | m,p-Xylenes | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | n-Butylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | n-Propylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | o-Xylene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | tert-Butylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | trans-1,2-Dichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | trans-1,3-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1,1,2-Tetrachloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1,1-Trichloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1-Dichloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1-Dichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,2,4-Trimethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,3,5-Trimethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,3-Dichlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,4-Dichlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 2,2-Dichloropropane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 2-Chlorotoluene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 2-Phenylbutane (sec-Butylbenzene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Benzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Bromodichloromethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Carbon tetrachloride | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Chlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Cymene (p-Isopropyltoluene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Ethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Isopropylbenzene (Cumene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Methylene chloride (Dichloromethane) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Styrene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Tetrachloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Toluene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Trichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | cis-1,3-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | m,p-Xylenes | U | UJ | LCS |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | n-Butylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | n-Propylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | o-Xylene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | tert-Butylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | trans-1,2-Dichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | trans-1,3-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1,1,2-Tetrachloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1,1-Trichloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1-Dichloroethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1-Dichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,2,4-Trimethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,3,5-Trimethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,3-Dichlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,4-Dichlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 2,2-Dichloropropane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 2-Chlorotoluene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 2-Phenylbutane (sec-Butylbenzene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Benzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Bromodichloromethane | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Carbon tetrachloride | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Chlorobenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Cymene (p-Isopropyltoluene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Ethylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Isopropylbenzene (Cumene) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Methylene chloride (Dichloromethane) | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Styrene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Tetrachloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Toluene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Trichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | cis-1,3-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | m,p-Xylenes | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | n-Butylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | n-Propylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | o-Xylene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | tert-Butylbenzene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | trans-1,2-Dichloroethene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | trans-1,3-Dichloropropene | U | UJ | LCS |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1,1,2-Tetrachloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1,1-Trichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1,2,2-Tetrachloroethane | U | R | VCR |

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1,2-Trichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1-Dichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,1-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,2,3-Trichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,2,3-Trichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,2,4-Trichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,2,4-Trimethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,2-Dibromo-3-chloropropane (DBCP) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,2-Dibromoethane (Ethylene Dibromide) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,2-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,2-Dichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,2-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,3,5-Trimethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,3-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,3-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 1,4-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 2,2-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 2-Chlorotoluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 2-Phenylbutane (sec-Butylbenzene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | 4-Chlorotoluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Benzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Bromobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Bromodichloromethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Bromoform | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Bromomethane (Methyl Bromide) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Carbon tetrachloride | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Chlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Chlorobromomethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Chloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Chloroform (Trichloromethane) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Chloromethane (Methyl Chloride) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Cymene (p-Isopropyltoluene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Dibromochloromethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Dibromomethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Dichlorodifluoromethane (CFC-12) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Ethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Hexachlorobutadiene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Isopropylbenzene (Cumene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Methyl Tert Butyl Ether (MTBE) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Methylene chloride (Dichloromethane) | U | R | VCR |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Naphthalene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Styrene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Tetrachloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Toluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Trichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Trichlorofluoromethane (CFC-11) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | Vinyl chloride | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | cis-1,2-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | cis-1,3-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | m,p-Xylenes | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | n-Butylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | n-Propylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | o-Xylene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | tert-Butylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | trans-1,2-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-1-S1-0.5 | 580-113209-1 | trans-1,3-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1,1,2-Tetrachloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1,1-Trichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1,2,2-Tetrachloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1,2-Trichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1-Dichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,1-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,2,3-Trichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,2,3-Trichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,2,4-Trichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,2,4-Trimethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,2-Dibromo-3-chloropropane (DBCP) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,2-Dibromoethane (Ethylene Dibromide) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,2-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,2-Dichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,2-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,3,5-Trimethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,3-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,3-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 1,4-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 2,2-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 2-Chlorotoluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 2-Phenylbutane (sec-Butylbenzene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | 4-Chlorotoluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Benzene | U | R | VCR |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Bromobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Bromodichloromethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Bromoform | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Bromomethane (Methyl Bromide) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Carbon tetrachloride | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Chlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Chlorobromomethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Chloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Chloroform (Trichloromethane) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Chloromethane (Methyl Chloride) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Cymene (p-Isopropyltoluene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Dibromochloromethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Dibromomethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Dichlorodifluoromethane (CFC-12) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Ethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Hexachlorobutadiene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Isopropylbenzene (Cumene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Methyl Tert Butyl Ether (MTBE) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Methylene chloride (Dichloromethane) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Naphthalene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Styrene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Tetrachloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Toluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Trichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Trichlorofluoromethane (CFC-11) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | Vinyl chloride | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | cis-1,2-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | cis-1,3-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | m,p-Xylenes | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | n-Butylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | n-Propylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | o-Xylene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | tert-Butylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | trans-1,2-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-11-S1-0.5 | 580-113209-6 | trans-1,3-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1,1,2-Tetrachloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1,1-Trichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1,2,2-Tetrachloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1,2-Trichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1-Dichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1-Dichloroethene | U | R | VCR |

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,1-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,2,3-Trichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,2,3-Trichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,2,4-Trichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,2,4-Trimethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,2-Dibromo-3-chloropropane (DBCP) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,2-Dibromoethane (Ethylene Dibromide) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,2-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,2-Dichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,2-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,3,5-Trimethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,3-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,3-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 1,4-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 2,2-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 2-Chlorotoluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 2-Phenylbutane (sec-Butylbenzene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | 4-Chlorotoluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Benzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Bromobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Bromodichloromethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Bromoform | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Bromomethane (Methyl Bromide) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Carbon tetrachloride | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Chlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Chlorobromomethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Chloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Chloroform (Trichloromethane) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Chloromethane (Methyl Chloride) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Cymene (p-Isopropyltoluene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Dibromochloromethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Dibromomethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Dichlorodifluoromethane (CFC-12) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Ethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Hexachlorobutadiene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Isopropylbenzene (Cumene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Methyl Tert Butyl Ether (MTBE) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Methylene chloride (Dichloromethane) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Naphthalene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Styrene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Tetrachloroethene | U | R | VCR |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Toluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Trichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Trichlorofluoromethane (CFC-11) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | Vinyl chloride | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | cis-1,2-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | cis-1,3-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | m,p-Xylenes | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | n-Butylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | n-Propylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | o-Xylene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | tert-Butylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | trans-1,2-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-4-S1-0.5 | 580-113209-4 | trans-1,3-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1,1,2-Tetrachloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1,1-Trichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1,2,2-Tetrachloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1,2-Trichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1-Dichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,1-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,2,3-Trichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,2,3-Trichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,2,4-Trichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,2,4-Trimethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,2-Dibromo-3-chloropropane (DBCP) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,2-Dibromoethane (Ethylene Dibromide) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,2-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,2-Dichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,2-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,3,5-Trimethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,3-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,3-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 1,4-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 2,2-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 2-Chlorotoluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 2-Phenylbutane (sec-Butylbenzene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | 4-Chlorotoluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Benzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Bromobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Bromodichloromethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Bromoform | U | R | VCR |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Bromomethane (Methyl Bromide) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Carbon tetrachloride | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Chlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Chlorobromomethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Chloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Chloroform (Trichloromethane) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Chloromethane (Methyl Chloride) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Cymene (p-Isopropyltoluene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Dibromochloromethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Dibromomethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Dichlorodifluoromethane (CFC-12) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Ethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Hexachlorobutadiene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Isopropylbenzene (Cumene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Methyl Tert Butyl Ether (MTBE) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Methylene chloride (Dichloromethane) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Naphthalene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Styrene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Tetrachloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Toluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Trichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Trichlorofluoromethane (CFC-11) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | Vinyl chloride | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | cis-1,2-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | cis-1,3-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | m,p-Xylenes | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | n-Butylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | n-Propylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | o-Xylene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | tert-Butylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | trans-1,2-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-7-R-S1-0.5 | 580-113209-3 | trans-1,3-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1,1,2-Tetrachloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1,1-Trichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1,2,2-Tetrachloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1,2-Trichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1-Dichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,1-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,2,3-Trichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,2,3-Trichloropropane | U | R | VCR |

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,2,4-Trichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,2,4-Trimethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,2-Dibromo-3-chloropropane (DBCP) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,2-Dibromoethane (Ethylene Dibromide) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,2-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,2-Dichloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,2-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,3,5-Trimethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,3-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,3-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 1,4-Dichlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 2,2-Dichloropropane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 2-Chlorotoluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 2-Phenylbutane (sec-Butylbenzene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | 4-Chlorotoluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Benzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Bromobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Bromodichloromethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Bromoform | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Bromomethane (Methyl Bromide) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Carbon tetrachloride | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Chlorobenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Chlorobromomethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Chloroethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Chloroform (Trichloromethane) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Chloromethane (Methyl Chloride) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Cymene (p-Isopropyltoluene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Dibromochloromethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Dibromomethane | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Dichlorodifluoromethane (CFC-12) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Ethylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Hexachlorobutadiene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Isopropylbenzene (Cumene) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Methyl Tert Butyl Ether (MTBE) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Methylene chloride (Dichloromethane) | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Naphthalene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Styrene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Tetrachloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Toluene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Trichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Trichlorofluoromethane (CFC-11) | U | R | VCR |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | Vinyl chloride | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | cis-1,2-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | cis-1,3-Dichloropropene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | m,p-Xylenes | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | n-Butylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | n-Propylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | o-Xylene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | tert-Butylbenzene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | trans-1,2-Dichloroethene | U | R | VCR |
| 5801132091 | SW8260D | NA | SS-8-S1-0.5 | 580-113209-5 | trans-1,3-Dichloropropene | U | R | VCR |
| 2207-016 | SW7196 | NA | MW-2S-S3 | 2207039-008 | Chromium VI (Hexavalent) | 2.15 | 2.15 J | DUP |
| 206500 | NWTPH-DX | NA | MW-3S-S2 | 206500-06 | Total Petroleum Hydrocarbons (C10-C28) DRO | 310 | 310 J | FDP |
| 2207-016 | NWTPH-EPH | NA | MW-3S-S2 | 2207039-004 | Total Petroleum Hydrocarbons (C21-C34) Aliphatic | 55.2 | 55.2 J | FDP |
| 206500 | NWTPH-GX | NA | MW-3S-S2 | 206500-06 | Gasoline Range Organics | 16 | 16 J | FDP |
| 2207039 | NWTPH-VPH | NA | MW-3S-S2 | 07-016-04 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | 6.7 | 6.7 J | FDP |
| 2207039 | NWTPH-VPH | NA | MW-3S-S2 | 07-016-04 | Total Petroleum Hydrocarbons (C12-C13) Aromatic | 74 | 74 J | FDP |
| 2207039 | NWTPH-VPH | NA | MW-3S-S2 | 07-016-04 | Total Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | FDP |
| 2207039 | NWTPH-VPH | NA | MW-3S-S2 | 07-016-04 | Total Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | FDP |
| 2207039 | NWTPH-VPH | NA | MW-3S-S2 | 07-016-04 | Total Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | FDP |
| 2207-016 | SW7196 | NA | MW-3S-S2 | 2207039-004 | Chromium VI (Hexavalent) | 1.34 | 1.34 J | FDP |
| 2207039 | SW8021B | NA | MW-3S-S2 | 07-016-04 | m,p-Xylenes | U | UJ | FDP |
| 206500 | SW8260D | NA | MW-3S-S2 | 206500-06 | Ethylbenzene | 0.0041 | 0.0041 J | FDP |
| 206500 | SW8260D | NA | MW-3S-S2 | 206500-06 | Toluene | 0.0037 | 0.0037 J | FDP |
| 206500 | SW8260D | NA | MW-3S-S2 | 206500-06 | m,p-Xylenes | 0.015 | 0.015 J | FDP |
| 206500 | SW8260D | NA | MW-3S-S2 | 206500-06 | o-Xylene | 0.027 | 0.027 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S2 | 206500-06 | 1-Methylnaphthalene | 0.36 | 0.36 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S2 | 206500-06 | 2-Methylnaphthalene | 0.13 | 0.13 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S2 | 206500-06 | Acenaphthene | 0.047 | 0.047 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S2 | 206500-06 | Benzo(a)anthracene | 0.0035 | 0.0035 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S2 | 206500-06 | Chrysene | 0.01 | 0.01 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S2 | 206500-06 | Fluorene | 0.23 | 0.23 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S2 | 206500-06 | Phenanthrene | 0.44 | 0.44 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S2 | 206500-06 | Pyrene | 0.038 | 0.038 J | FDP |
| 206500 | NWTPH-DX | NA | MW-3S-S200 | 206500-08 | Total Petroleum Hydrocarbons (C10-C28) DRO | 1100 | 1100 J | FDP |
| 2207-016 | NWTPH-EPH | NA | MW-3S-S200 | 2207039-006 | Total Petroleum Hydrocarbons (C21-C34) Aliphatic | 40.9 | 40.9 J | FDP |
| 206500 | NWTPH-GX | NA | MW-3S-S200 | 206500-08 | Gasoline Range Organics | 50 | 50 J | FDP |
| 2207039 | NWTPH-VPH | NA | MW-3S-S200 | 07-016-06 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | 73 | 73 J | FDP |
| 2207039 | NWTPH-VPH | NA | MW-3S-S200 | 07-016-06 | Total Petroleum Hydrocarbons (C12-C13) Aromatic | 470 | 470 J | FDP |
| 2207039 | NWTPH-VPH | NA | MW-3S-S200 | 07-016-06 | Total Petroleum Hydrocarbons (C6-C8) Aliphatic | 24 | 24 J | FDP |
| 2207039 | NWTPH-VPH | NA | MW-3S-S200 | 07-016-06 | Total Petroleum Hydrocarbons (C8-C10) Aliphatic | 27 | 27 J | FDP |
| 2207039 | NWTPH-VPH | NA | MW-3S-S200 | 07-016-06 | Total Petroleum Hydrocarbons (C8-C10) Aromatic | 20 | 20 J | FDP |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 2207-016 | SW7196 | NA | MW-3S-S200 | 2207039-006 | Chromium VI (Hexavalent) | 3.19 | 3.19 J | FDP |
| 2207039 | SW8021B | NA | MW-3S-S200 | 07-016-06 | m,p-Xylenes | 0.17 | 0.17 J | FDP |
| 206500 | SW8260D | NA | MW-3S-S200 | 206500-08 | Ethylbenzene | 0.0024 | 0.0024 J | FDP |
| 206500 | SW8260D | NA | MW-3S-S200 | 206500-08 | Toluene | 0.0022 | 0.0022 J | FDP |
| 206500 | SW8260D | NA | MW-3S-S200 | 206500-08 | m,p-Xylenes | 0.0096 | 0.0096 J | FDP |
| 206500 | SW8260D | NA | MW-3S-S200 | 206500-08 | o-Xylene | 0.016 | 0.016 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | 1-Methylnaphthalene | 1.8 | 1.8 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | 2-Methylnaphthalene | 0.89 | 0.89 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | Acenaphthene | U | UJ | FDP |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | Benzo(a)anthracene | 0.012 | 0.012 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | Chrysene | 0.034 | 0.034 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | Fluorene | 0.89 | 0.89 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | Phenanthrene | 1.6 | 1.6 J | FDP |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | Pyrene | 0.11 | 0.11 J | FDP |
| 206500 | SW6020 | NA | MW-1S-S2 | 206500-15 | Arsenic | 1.52 | 1.52 J- | MSD |
| 206500 | SW6020 | NA | MW-1S-S2 | 206500-15 | Silver | U | UJ | MSD |
| 206500 | SW6020 | NA | MW-1S-S2 | 206500-15 | Zinc | 47.4 | 47.4 J- | MSD |
| 206500 | SW6020 | NA | MW-1S-S3 | 206500-16 | Arsenic | 2.5 | 2.5 J- | MSD |
| 206500 | SW6020 | NA | MW-1S-S3 | 206500-16 | Silver | U | UJ | MSD |
| 206500 | SW6020 | NA | MW-1S-S3 | 206500-16 | Zinc | 43.2 | 43.2 J- | MSD |
| 206500 | SW6020 | NA | MW-2S-S2 | 206500-11 | Arsenic | 1.25 | 1.25 J- | MSD |
| 206500 | SW6020 | NA | MW-2S-S2 | 206500-11 | Silver | U | UJ | MSD |
| 206500 | SW6020 | NA | MW-2S-S2 | 206500-11 | Zinc | 53.7 | 53.7 J- | MSD |
| 206500 | SW6020 | NA | MW-2S-S3 | 206500-12 | Arsenic | 2.53 | 2.53 J- | MSD |
| 206500 | SW6020 | NA | MW-2S-S3 | 206500-12 | Silver | U | UJ | MSD |
| 206500 | SW6020 | NA | MW-2S-S3 | 206500-12 | Zinc | 45.4 | 45.4 J- | MSD |
| 206500 | SW6020 | NA | MW-3S-S1 | 206500-05 | Arsenic | 1.62 | 1.62 J- | MSD |
| 206500 | SW6020 | NA | MW-3S-S1 | 206500-05 | Silver | U | UJ | MSD |
| 206500 | SW6020 | NA | MW-3S-S1 | 206500-05 | Zinc | 66 | 66 J- | MSD |
| 206500 | SW6020 | NA | MW-3S-S2 | 206500-06 | Arsenic | 1.39 | 1.39 J- | MSD |
| 206500 | SW6020 | NA | MW-3S-S2 | 206500-06 | Silver | U | UJ | MSD |
| 206500 | SW6020 | NA | MW-3S-S2 | 206500-06 | Zinc | 54.1 | 54.1 J- | MSD |
| 206500 | SW6020 | NA | MW-3S-S200 | 206500-08 | Arsenic | 1.44 | 1.44 J- | MSD |
| 206500 | SW6020 | NA | MW-3S-S200 | 206500-08 | Silver | U | UJ | MSD |
| 206500 | SW6020 | NA | MW-3S-S200 | 206500-08 | Zinc | 55.4 | 55.4 J- | MSD |
| 206500 | SW6020 | NA | MW-3S-S3 | 206500-07 | Arsenic | 1.29 | 1.29 J- | MSD |
| 206500 | SW6020 | NA | MW-3S-S3 | 206500-07 | Silver | U | UJ | MSD |
| 206500 | SW6020 | NA | MW-3S-S3 | 206500-07 | Zinc | 45.9 | 45.9 J- | MSD |
| 206500 | SW6020 | NA | MW-4S-S2 | 206500-02 | Arsenic | 1.3 | 1.3 J- | MSD |
| 206500 | SW6020 | NA | MW-4S-S2 | 206500-02 | Silver | U | UJ | MSD |
| 206500 | SW6020 | NA | MW-4S-S2 | 206500-02 | Zinc | 61.1 | 61.1 J- | MSD |

**TABLE F-9**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 206500 | SW6020 | NA | MW-4S-S4 | 206500-04 | Arsenic | 4.97 | 4.97 J- | MSD |
| 206500 | SW6020 | NA | MW-4S-S4 | 206500-04 | Silver | U | UJ | MSD |
| 206500 | SW6020 | NA | MW-4S-S4 | 206500-04 | Zinc | 45.1 | 45.1 J- | MSD |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | 1-Methylnaphthalene | 1.7 | 1.7 R | VCR |
| 206500 | SW8270E | NA | MW-3S-S200 | 206500-08 | Phenanthrene | 1.5 | 1.5 R | VCR |
| 206500 | SW8260D | NA | MW-4S-S2 | 206500-02 | Methylene chloride (Dichloromethane) | 0.66 | 0.66 LC | LC |
| 206500 | SW8260D | NA | MW-4S-S4 | 206500-04 | Methylene chloride (Dichloromethane) | 0.51 | 0.51 LC | LC |
| 206500 | SW8260D | NA | MW-3S-S1 | 206500-05 | Methylene chloride (Dichloromethane) | 0.34 | 0.34 LC | LC |
| 206500 | SW8260D | NA | MW-3S-S2 | 206500-06 | Methylene chloride (Dichloromethane) | 0.36 | 0.36 LC | LC |
| 206500 | SW8260D | NA | MW-3S-S3 | 206500-07 | Methylene chloride (Dichloromethane) | 0.3 | 0.3 LC | LC |
| 206500 | SW8260D | NA | MW-1S-S2 | 206500-15 | Methylene chloride (Dichloromethane) | 0.37 | 0.37 LC | LC |
| 206500 | SW8260D | NA | MW-1S-S3 | 206500-16 | Methylene chloride (Dichloromethane) | 0.21 | 0.21 LC | LC |

**Notes**
DUP = Laboratory duplicate relative percent difference exceeds the specified limits.
FDP = Field duplicate qualifier due to an exceedance of the specified limits.
LC = Laboratory contamination.
LCS = Laboratory control/laboratory control spike duplicate percent recoveries or relative percent difference were outside the specified limits.
MSD = Matrix spike/matrix spike duplicate percent recoveries or relative percent difference were outside the specified limits.
VCR = Validator's choice of reanalysis.
UJ = The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
J- = The result is an estimated quantity, but the result may be biased low.
R = The sample results were rejected as unusable; the compound may or may not be present in the sample.
UJ = The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

eurofins | Environment Testing America



# ANALYTICAL REPORT

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-113209-1
Client Project/Site: Kosmos

For:
Hart Crowser, Inc.
3131 Elliott Ave
Suite 600
Seattle, Washington 98121

Attn: Ms. Angie Goodwin

Kristine D. Allen

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

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

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## Job ID: 580-113209-1

### Laboratory: Eurofins Seattle

**Narrative**

**Job Narrative**
**580-113209-1**

**Comments**
No additional comments.

**Receipt**
The samples were received on 4/28/2022 10:54 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.1º C.

**Receipt Exceptions**

The following sample was placed on hold by the client on 4-29-22: SS-7-S1-0.5 (580-113209-2).

**GC/MS VOA**
Method 8260D: The continuing calibration verification (CCV) associated with batch 580-390212 recovered outside acceptance criteria, low biased, for Vinyl Chloride, Dichlorodifluoromethane, Hexachlorobutadiene, Trichlorofluoromethane, 1,1-Dichloropropene, 1,2-Dibromo-3-Chloropropane and Bromomethane. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D: Multiple analytes failed low for the LCSD associated with prep batch 389935 and analytical batch 390212. The LCS met the acceptance criteria. The associated samples were reanalyzed outside of holding time and both sets of data have been reported. In addition the RPD was outside of control limits for multiple analytes. SS-1-S1-0.5 (580-113209-1), SS-7-R-S1-0.5 (580-113209-3), SS-4-S1-0.5 (580-113209-4), SS-8-S1-0.5 (580-113209-5), SS-11-S1-0.5 (580-113209-6) and (LCSD 580-389935/3-A)

Methylene Chloride failed low in the CCVIS associated with analytical batch 580-390212. The associated samples were reanalyzed outside of holding time and both sets of data have been reported. SS-1-S1-0.5 (580-113209-1), SS-7-R-S1-0.5 (580-113209-3), SS-4-S1-0.5 (580-113209-4), SS-8-S1-0.5 (580-113209-5), SS-11-S1-0.5 (580-113209-6) and (LCSD 580-389935/3-A)

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-390936 recovered outside acceptance criteria, low biased, for Chlorobromomethane. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D: The CCV for preparation batch 580-390896 and analytical batch 580-390936 recovered outside control limits for the following analyte(s): Bromomethane. Bromomethane has been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-390936 recovered outside acceptance criteria, low biased, for Chlorobromomethane. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D: The laboratory control sample and/or the laboratory control sample duplicate (LCS/LCSD) for preparation batch 580-390896 and analytical batch 580-390936 recovered outside control limits for the following analyte(s): Bromomethane. Bromomethane has been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed.

Method 8260D: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 580-390896 and analytical batch 580-390936 recovered outside control limits for the multiple analytes. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-390936 recovered above the upper control limit for Chloromethane, 2,2-Dichloropropane, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,2-Dichloroethane-d4 (Surr), Chloroethane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, 1,1-Dichloroethane, Methyl tert-butyl ether, N-Propylbenzene, 4-Chlorotoluene, Carbon tetrachloride, 1,2,3-Trichloropropane, 1,1,2,2-Tetrachloroethane, 4-Isopropyltoluene, sec-Butylbenzene, Trichlorofluoromethane, n-Butylbenzene, 1,1,1-Trichloroethane, Dichlorobromomethane, Napthalene, 1,4-Dichlorobenzene, tert-Butylbenzene, 2-Chlorotoluene,

## Job ID: 580-113209-1 (Continued)

### Laboratory: Eurofins Seattle (Continued)

1,2-Dichlorobenzene, 1,3-Dichlorobenzene, and m-Xylene & p-Xylene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: SS-1-S1-0.5 (580-113209-1), SS-7-R-S1-0.5 (580-113209-3), SS-4-S1-0.5 (580-113209-4), SS-8-S1-0.5 (580-113209-5), SS-11-S1-0.5 (580-113209-6) and (CCVIS 580-390936/3).

Method 8260D: The following samples are being reported with QC failures: 4-Bromofluorobenzene (Surr) failed low in the LCSD and all associated samples. Additionally, Methylene Chloride failed low in the CCVIS with the RL check not passing. No more volume of the samples remain, therefore data is being reported. SS-1-S1-0.5 (580-113209-1), SS-7-R-S1-0.5 (580-113209-3), SS-4-S1-0.5 (580-113209-4), SS-8-S1-0.5 (580-113209-5) and SS-11-S1-0.5 (580-113209-6)

Method 8260D: Surrogate recovery for the following samples were outside the upper control limit: SS-1-S1-0.5 (580-113209-1), SS-7-R-S1-0.5 (580-113209-3), SS-4-S1-0.5 (580-113209-4), SS-8-S1-0.5 (580-113209-5), SS-11-S1-0.5 (580-113209-6) and (MB 580-390896/1-A). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

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

**GC/MS Semi VOA**
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**GC Semi VOA**
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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

**General Chemistry**
Method 9060A: The sample duplicate (DUP) precision for analytical batch 580-390261 was outside control limits. Sample matrix interference is suspected.

Method 7196A: The following sample was diluted due to the nature of the sample matrix: SS-1-S1-0.5 (580-113209-1). Elevated reporting limits (RLs) are provided.

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

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

**VOA Prep**
Method 5035: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: SS-1-S1-0.5 (580-113209-1) and SS-8-S1-0.5 (580-113209-5). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 5g . The amount provided was below this range.

Method 5035: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: SS-7-R-S1-0.5 (580-113209-3) and SS-8-S1-0.5 (580-113209-5). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 10g. The amount provided was below this range.

Method 5035: The following sample was provided to the laboratory with a significantly different initial weight than that required by the reference method: SS-8-S1-0.5 (580-113209-5). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 5 g. The amount provided was above this range.

Method 5035: The following sample was provided to the laboratory with a significantly different initial weight than that required by the reference method: SS-11-S1-0.5 (580-113209-6). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 5g. The amount provided was above this range.

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

# Definitions/Glossary

Client: Hart Crowser, Inc.
Job ID: 580-113209-1
Project/Site: Kosmos

## Qualifiers

### GC/MS VOA

| Qualifier | Qualifier Description |
|---|---|
| *- | LCS and/or LCSD is outside acceptance limits, low biased. |
| *+ | LCS and/or LCSD is outside acceptance limits, high biased. |
| *1 | LCS/LCSD RPD exceeds control limits. |
| H | Sample was prepped or analyzed beyond the specified holding time |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| S1- | Surrogate recovery exceeds control limits, low biased. |
| S1+ | Surrogate recovery exceeds control limits, high biased. |

### General Chemistry

| Qualifier | Qualifier Description |
|---|---|
| F3 | Duplicate RPD exceeds the control limit |

## Glossary

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

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

**Client Sample ID: SS-1-S1-0.5**
**Date Collected: 04/27/22 16:00**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-1**
**Matrix: Solid**
**Percent Solids: 57.2**

**Method: 8260D - Volatile Organic Compounds by GC/MS**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | *- *1 | 0.0054 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,1,1-Trichloroethane | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.0072 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,1,2-Trichloroethane | ND | *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,1-Dichloroethane | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,1-Dichloroethene | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,1-Dichloropropene | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 0.0054 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,2,3-Trichloropropane | ND | | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,2,4-Trimethylbenzene | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 0.018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,2-Dibromoethane | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,2-Dichlorobenzene | ND | *1 | 0.018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,2-Dichloroethane | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,2-Dichloropropane | ND | *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,3,5-Trimethylbenzene | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,3-Dichlorobenzene | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,3-Dichloropropane | ND | *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 1,4-Dichlorobenzene | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 2,2-Dichloropropane | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 2-Chlorotoluene | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 4-Chlorotoluene | ND | *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| 4-Isopropyltoluene | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Benzene | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Bromobenzene | ND | *1 | 0.018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Bromochloromethane | ND | | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Bromodichloromethane | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Bromoform | ND | | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Bromomethane | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Carbon tetrachloride | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Chlorobenzene | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Chloroethane | ND | | 0.018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Chloroform | ND | | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Chloromethane | ND | | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| cis-1,2-Dichloroethene | ND | *1 | 0.0054 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| cis-1,3-Dichloropropene | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Dibromochloromethane | ND | | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Dibromomethane | ND | | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Dichlorodifluoromethane | ND | | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Ethylbenzene | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Hexachlorobutadiene | ND | | 0.0054 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Isopropylbenzene | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Methyl tert-butyl ether | ND | | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Methylene Chloride | ND | *- *1 | 0.072 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| m-Xylene & p-Xylene | ND | *- *1 | 0.018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Naphthalene | ND | | 0.018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| n-Butylbenzene | ND | *- | 0.0054 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| N-Propylbenzene | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |

**Client Sample ID: SS-1-S1-0.5**
**Date Collected: 04/27/22 16:00**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-1**
**Matrix: Solid**
**Percent Solids: 57.2**

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| o-Xylene | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| sec-Butylbenzene | ND | *- *1 | 0.0054 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Styrene | ND | *- *1 | 0.0054 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| t-Butylbenzene | ND | *- *1 | 0.0054 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Tetrachloroethene | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Toluene | ND | *- *1 | 0.018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| trans-1,2-Dichloroethene | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| trans-1,3-Dichloropropene | ND | *- | 0.018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Trichloroethene | ND | *- *1 | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Trichlorofluoromethane | ND | | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |
| Vinyl chloride | ND | | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 14:44 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *108* | | *80 - 121* | *04/28/22 11:00* | *05/09/22 14:44* | *1* |
| *4-Bromofluorobenzene (Surr)* | *97* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 14:44* | *1* |
| *Dibromofluoromethane (Surr)* | *115* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 14:44* | *1* |
| *Toluene-d8 (Surr)* | *93* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 14:44* | *1* |

## Method: 8260D - Volatile Organic Compounds by GC/MS - RA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | H | 0.41 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,1,1-Trichloroethane | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | H *+ | 0.55 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,1,2-Trichloroethane | ND | H *+ | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,1-Dichloroethane | ND | H *+ | 0.14 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,1-Dichloroethene | ND | H | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,1-Dichloropropene | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,2,3-Trichlorobenzene | ND | H | 0.41 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,2,3-Trichloropropane | ND | H *+ | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,2,4-Trichlorobenzene | ND | H *+ | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,2,4-Trimethylbenzene | ND | H *+ | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | H *+ | 1.4 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,2-Dibromoethane | ND | H *+ | 0.14 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,2-Dichlorobenzene | ND | H *+ | 1.4 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,2-Dichloroethane | ND | H *+ | 0.14 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,2-Dichloropropane | ND | H *+ | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,3,5-Trimethylbenzene | ND | H *+ | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,3-Dichlorobenzene | ND | H *+ | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,3-Dichloropropane | ND | H *+ | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 1,4-Dichlorobenzene | ND | H *+ | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 2,2-Dichloropropane | ND | H *+ | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 2-Chlorotoluene | ND | H *+ | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 4-Chlorotoluene | ND | H *+ | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| 4-Isopropyltoluene | ND | H *+ | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Benzene | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Bromobenzene | ND | H *+ | 1.4 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Bromochloromethane | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Bromodichloromethane | ND | H *+ | 0.14 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Bromoform | ND | H | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Bromomethane | ND | H *- | 0.14 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |

**Client Sample ID: SS-1-S1-0.5**
**Date Collected: 04/27/22 16:00**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-1**
**Matrix: Solid**
**Percent Solids: 57.2**

## Method: 8260D - Volatile Organic Compounds by GC/MS - RA (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Carbon tetrachloride | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Chlorobenzene | ND | H *+ | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Chloroethane | ND | H | 1.4 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Chloroform | ND | H *+ | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Chloromethane | ND | H | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| cis-1,2-Dichloroethene | ND | H | 0.41 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| cis-1,3-Dichloropropene | ND | H *+ | 0.14 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Dibromochloromethane | ND | H *+ | 0.20 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Dibromomethane | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Dichlorodifluoromethane | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Ethylbenzene | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Hexachlorobutadiene | ND | H | 0.41 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Isopropylbenzene | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Methyl tert-butyl ether | ND | H *+ | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Methylene Chloride | ND | H | 5.5 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| m-Xylene & p-Xylene | ND | H *+ | 1.4 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Naphthalene | ND | H *+ | 1.4 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| n-Butylbenzene | ND | H | 0.41 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| N-Propylbenzene | ND | H *+ | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| o-Xylene | ND | H *+ | 0.68 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| sec-Butylbenzene | ND | H *+ | 0.41 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Styrene | ND | H *+ | 0.41 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| t-Butylbenzene | ND | H | 0.41 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Tetrachloroethene | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Toluene | ND | H | 1.4 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| trans-1,2-Dichloroethene | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| trans-1,3-Dichloropropene | ND | H *+ | 1.4 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Trichloroethene | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Trichlorofluoromethane | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |
| Vinyl chloride | ND | H | 0.27 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 12:51 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *147* | *S1+* | *80 - 121* | *04/28/22 11:00* | *05/17/22 12:51* | *1* |
| *4-Bromofluorobenzene (Surr)* | *77* | *S1-* | *80 - 120* | *04/28/22 11:00* | *05/17/22 12:51* | *1* |
| *Dibromofluoromethane (Surr)* | *97* | | *80 - 120* | *04/28/22 11:00* | *05/17/22 12:51* | *1* |
| *Toluene-d8 (Surr)* | *97* | | *80 - 120* | *04/28/22 11:00* | *05/17/22 12:51* | *1* |

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | | 11 | | mg/Kg | ☼ | 05/07/22 12:31 | 05/07/22 15:00 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *92* | | *66 - 125* | *05/07/22 12:31* | *05/07/22 15:00* | *1* |

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| 2-Methylnaphthalene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Acenaphthene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Acenaphthylene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |

**Client Sample ID: SS-1-S1-0.5**
**Date Collected: 04/27/22 16:00**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-1**
**Matrix: Solid**
**Percent Solids: 57.2**

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Anthracene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Benzo[a]anthracene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Benzo[a]pyrene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Benzo[b]fluoranthene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Benzo[k]fluoranthene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Chrysene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Fluoranthene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Fluorene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Naphthalene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Phenanthrene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |
| Pyrene | ND | | 0.0086 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 14:11 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *119* | | *57 - 145* | *05/11/22 16:47* | *05/13/22 14:11* | *1* |

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 80 | | mg/Kg | ☼ | 05/10/22 13:16 | 05/12/22 15:58 | 1 |
| **Motor Oil (>C24-C36)** | **150** | | 80 | | mg/Kg | ☼ | 05/10/22 13:16 | 05/12/22 15:58 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *95* | | *50 - 150* | *05/10/22 13:16* | *05/12/22 15:58* | *1* |

## Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **2.1** | | 0.63 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:29 | 10 |
| **Barium** | **66** | | 1.3 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:29 | 10 |
| Cadmium | ND | | 1.0 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:29 | 10 |
| **Chromium** | **27** | | 1.3 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:29 | 10 |
| **Copper** | **65** | | 1.3 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:29 | 10 |
| **Lead** | **4.2** | | 0.63 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:29 | 10 |
| **Nickel** | **21** | | 0.63 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:29 | 10 |
| **Selenium** | **3.3** | | 1.9 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:29 | 10 |
| Silver | ND | | 0.25 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:29 | 10 |
| **Zinc** | **62** | | 7.0 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:29 | 10 |

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.051** | | 0.050 | | mg/Kg | ☼ | 05/09/22 10:43 | 05/09/22 20:10 | 1 |

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | ND | | 3.8 | | mg/Kg | ☼ | 05/05/22 21:18 | 05/10/22 00:30 | 5 |
| **Cr (III)** | **27** | | 0.011 | | mg/Kg | | | 05/12/22 02:35 | 1 |
| **Total Organic Carbon - Average Dup** | **29000** | | 2000 | | mg/Kg | | | 05/10/22 19:12 | 1 |

| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Solids** | **57.2** | | 0.1 | | % | | | 05/10/22 13:38 | 1 |

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

**Client Sample ID: SS-1-S1-0.5**
**Date Collected: 04/27/22 16:00**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-1**
**Matrix: Solid**
**Percent Solids: 57.2**

## General Chemistry (Continued)

| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture | 42.8 | | 0.1 | | % | | | 05/10/22 13:38 | 1 |

## Client Sample ID: SS-7-R-S1-0.5

**Date Collected: 04/27/22 17:00**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-3

**Matrix: Solid**
**Percent Solids: 81.8**

### Method: 8260D - Volatile Organic Compounds by GC/MS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | *- *1 | 0.0039 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,1,1-Trichloroethane | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.0052 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,1,2-Trichloroethane | ND | *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,1-Dichloroethane | ND | *- *1 | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,1-Dichloroethene | ND | *- *1 | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,1-Dichloropropene | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 0.0039 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,2,3-Trichloropropane | ND | | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,2,4-Trimethylbenzene | ND | *- *1 | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,2-Dibromoethane | ND | | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,2-Dichlorobenzene | ND | *1 | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,2-Dichloroethane | ND | | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,2-Dichloropropane | ND | *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,3,5-Trimethylbenzene | ND | *- *1 | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,3-Dichlorobenzene | ND | *- *1 | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,3-Dichloropropane | ND | *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 1,4-Dichlorobenzene | ND | *- *1 | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 2,2-Dichloropropane | ND | *- *1 | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 2-Chlorotoluene | ND | *- *1 | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 4-Chlorotoluene | ND | *1 | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| 4-Isopropyltoluene | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Benzene | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Bromobenzene | ND | *1 | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Bromochloromethane | ND | | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Bromodichloromethane | ND | *- *1 | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Bromoform | ND | | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Bromomethane | ND | | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Carbon tetrachloride | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Chlorobenzene | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Chloroethane | ND | | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Chloroform | ND | | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Chloromethane | ND | | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| cis-1,2-Dichloroethene | ND | *1 | 0.0039 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| cis-1,3-Dichloropropene | ND | *- *1 | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Dibromochloromethane | ND | | 0.0019 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Dibromomethane | ND | | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Dichlorodifluoromethane | ND | | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Ethylbenzene | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Hexachlorobutadiene | ND | | 0.0039 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Isopropylbenzene | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Methyl tert-butyl ether | ND | | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Methylene Chloride | ND | *- *1 | 0.052 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| m-Xylene & p-Xylene | ND | *- *1 | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Naphthalene | ND | | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| n-Butylbenzene | ND | *- | 0.0039 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| N-Propylbenzene | ND | *- *1 | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |

## Client Sample ID: SS-7-R-S1-0.5

**Date Collected: 04/27/22 17:00**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-3

**Matrix: Solid**
**Percent Solids: 81.8**

### Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| o-Xylene | ND | *- *1 | 0.0065 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| sec-Butylbenzene | ND | *- *1 | 0.0039 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Styrene | ND | *- *1 | 0.0039 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| t-Butylbenzene | ND | *- *1 | 0.0039 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Tetrachloroethene | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Toluene | ND | *- *1 | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| trans-1,2-Dichloroethene | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| trans-1,3-Dichloropropene | ND | *- | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Trichloroethene | ND | *- *1 | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Trichlorofluoromethane | ND | | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |
| Vinyl chloride | ND | | 0.0026 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:29 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *102* | | *80 - 121* | *04/28/22 11:00* | *05/09/22 15:29* | *1* |
| *4-Bromofluorobenzene (Surr)* | *97* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 15:29* | *1* |
| *Dibromofluoromethane (Surr)* | *105* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 15:29* | *1* |
| *Toluene-d8 (Surr)* | *97* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 15:29* | *1* |

### Method: 8260D - Volatile Organic Compounds by GC/MS - RA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | H | 0.0040 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,1,1-Trichloroethane | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | H *+ | 0.0053 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,1,2-Trichloroethane | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,1-Dichloroethane | ND | H *+ | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,1-Dichloroethene | ND | H | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,1-Dichloropropene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,2,3-Trichlorobenzene | ND | H | 0.0040 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,2,3-Trichloropropane | ND | H *+ | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,2,4-Trichlorobenzene | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,2,4-Trimethylbenzene | ND | H *+ | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | H *+ | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,2-Dibromoethane | ND | H *+ | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,2-Dichlorobenzene | ND | H *+ | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,2-Dichloroethane | ND | H *+ | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,2-Dichloropropane | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,3,5-Trimethylbenzene | ND | H *+ | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,3-Dichlorobenzene | ND | H *+ | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,3-Dichloropropane | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 1,4-Dichlorobenzene | ND | H *+ | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 2,2-Dichloropropane | ND | H *+ | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 2-Chlorotoluene | ND | H *+ | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 4-Chlorotoluene | ND | H *+ | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| 4-Isopropyltoluene | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Benzene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Bromobenzene | ND | H *+ | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Bromochloromethane | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Bromodichloromethane | ND | H *+ | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Bromoform | ND | H | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Bromomethane | ND | H *- | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |

## Client Sample ID: SS-7-R-S1-0.5

**Date Collected: 04/27/22 17:00**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-3

**Matrix: Solid**
**Percent Solids: 81.8**

### Method: 8260D - Volatile Organic Compounds by GC/MS - RA (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Carbon tetrachloride | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Chlorobenzene | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Chloroethane | ND | H | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Chloroform | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Chloromethane | ND | H | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| cis-1,2-Dichloroethene | ND | H | 0.0040 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| cis-1,3-Dichloropropene | ND | H *+ | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Dibromochloromethane | ND | H *+ | 0.0020 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Dibromomethane | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Dichlorodifluoromethane | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Ethylbenzene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Hexachlorobutadiene | ND | H | 0.0040 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Isopropylbenzene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Methyl tert-butyl ether | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Methylene Chloride | ND | H | 0.053 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| m-Xylene & p-Xylene | ND | H *+ | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Naphthalene | ND | H *+ | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| n-Butylbenzene | ND | H | 0.0040 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| N-Propylbenzene | ND | H *+ | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| o-Xylene | ND | H *+ | 0.0066 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| sec-Butylbenzene | ND | H *+ | 0.0040 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Styrene | ND | H *+ | 0.0040 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| t-Butylbenzene | ND | H | 0.0040 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Tetrachloroethene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Toluene | ND | H | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| trans-1,2-Dichloroethene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| trans-1,3-Dichloropropene | ND | H *+ | 0.013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Trichloroethene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Trichlorofluoromethane | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |
| Vinyl chloride | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:13 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *176* | *S1+* | *80 - 121* | *04/28/22 11:00* | *05/17/22 13:13* | *1* |
| *4-Bromofluorobenzene (Surr)* | *79* | *S1-* | *80 - 120* | *04/28/22 11:00* | *05/17/22 13:13* | *1* |
| *Dibromofluoromethane (Surr)* | *112* | | *80 - 120* | *04/28/22 11:00* | *05/17/22 13:13* | *1* |
| *Toluene-d8 (Surr)* | *94* | | *80 - 120* | *04/28/22 11:00* | *05/17/22 13:13* | *1* |

### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | | 11 | | mg/Kg | ☼ | 05/07/22 12:31 | 05/07/22 15:23 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *91* | | *66 - 125* | *05/07/22 12:31* | *05/07/22 15:23* | *1* |

### Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| 2-Methylnaphthalene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Acenaphthene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Acenaphthylene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |

## Client Sample ID: SS-7-R-S1-0.5

**Date Collected: 04/27/22 17:00**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-3

**Matrix: Solid**
**Percent Solids: 81.8**

### Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Anthracene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Benzo[a]anthracene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Benzo[a]pyrene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Benzo[b]fluoranthene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Benzo[k]fluoranthene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Chrysene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Fluoranthene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Fluorene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Naphthalene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Phenanthrene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |
| Pyrene | ND | | 0.0056 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:25 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *123* | | *57 - 145* | *05/11/22 16:47* | *05/13/22 15:25* | *1* |

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 58 | | mg/Kg | ☼ | 05/10/22 13:16 | 05/12/22 16:19 | 1 |
| **Motor Oil (>C24-C36)** | **110** | | 58 | | mg/Kg | ☼ | 05/10/22 13:16 | 05/12/22 16:19 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *101* | | *50 - 150* | *05/10/22 13:16* | *05/12/22 16:19* | *1* |

### Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **1.6** | | 0.47 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:33 | 10 |
| **Barium** | **37** | | 0.94 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:33 | 10 |
| Cadmium | ND | | 0.75 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:33 | 10 |
| **Chromium** | **14** | | 0.94 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:33 | 10 |
| **Copper** | **42** | | 0.94 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:33 | 10 |
| **Lead** | **2.0** | | 0.47 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:33 | 10 |
| **Nickel** | **13** | | 0.47 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:33 | 10 |
| **Selenium** | **2.1** | | 1.4 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:33 | 10 |
| Silver | ND | | 0.19 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:33 | 10 |
| **Zinc** | **48** | | 5.2 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:33 | 10 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.030 | | mg/Kg | ☼ | 05/09/22 10:43 | 05/09/22 20:20 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | ND | | 0.51 | | mg/Kg | ☼ | 05/05/22 21:18 | 05/10/22 00:30 | 1 |
| **Cr (III)** | **14** | | 0.011 | | mg/Kg | | | 05/12/22 02:35 | 1 |
| **Total Organic Carbon - Average Dup** | **10000** | | 2000 | | mg/Kg | | | 05/11/22 13:49 | 1 |

| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Solids** | **81.8** | | 0.1 | | % | | | 05/10/22 13:38 | 1 |

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

**Client Sample ID: SS-7-R-S1-0.5**
**Date Collected: 04/27/22 17:00**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-3**
**Matrix: Solid**
**Percent Solids: 81.8**

## General Chemistry (Continued)

| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture | 18.2 | | 0.1 | | % | | | 05/10/22 13:38 | 1 |

## Client Sample ID: SS-4-S1-0.5

**Date Collected: 04/27/22 12:15**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-4

**Matrix: Solid**
**Percent Solids: 79.3**

### Method: 8260D - Volatile Organic Compounds by GC/MS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | *- *1 | 0.0034 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,1,1-Trichloroethane | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,1,2-Trichloroethane | ND | *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,1-Dichloroethane | ND | *- *1 | 0.0011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,1-Dichloroethene | ND | *- *1 | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,1-Dichloropropene | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 0.0034 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,2,3-Trichloropropane | ND | | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,2,4-Trimethylbenzene | ND | *- *1 | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 0.011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,2-Dibromoethane | ND | | 0.0011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,2-Dichlorobenzene | ND | *1 | 0.011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,2-Dichloroethane | ND | | 0.0011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,2-Dichloropropane | ND | *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,3,5-Trimethylbenzene | ND | *- *1 | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,3-Dichlorobenzene | ND | *- *1 | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,3-Dichloropropane | ND | *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 1,4-Dichlorobenzene | ND | *- *1 | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 2,2-Dichloropropane | ND | *- *1 | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 2-Chlorotoluene | ND | *- *1 | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 4-Chlorotoluene | ND | *1 | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| 4-Isopropyltoluene | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Benzene | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Bromobenzene | ND | *1 | 0.011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Bromochloromethane | ND | | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Bromodichloromethane | ND | *- *1 | 0.0011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Bromoform | ND | | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Bromomethane | ND | | 0.0011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Carbon tetrachloride | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Chlorobenzene | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Chloroethane | ND | | 0.011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Chloroform | ND | | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Chloromethane | ND | | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| cis-1,2-Dichloroethene | ND | *1 | 0.0034 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| cis-1,3-Dichloropropene | ND | *- *1 | 0.0011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Dibromochloromethane | ND | | 0.0017 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Dibromomethane | ND | | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Dichlorodifluoromethane | ND | | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Ethylbenzene | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Hexachlorobutadiene | ND | | 0.0034 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Isopropylbenzene | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Methyl tert-butyl ether | ND | | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Methylene Chloride | ND | *- *1 | 0.045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| m-Xylene & p-Xylene | ND | *- *1 | 0.011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Naphthalene | ND | | 0.011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| n-Butylbenzene | ND | *- | 0.0034 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| N-Propylbenzene | ND | *- *1 | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |

**Client Sample ID: SS-4-S1-0.5**
**Date Collected: 04/27/22 12:15**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-4**
**Matrix: Solid**
**Percent Solids: 79.3**

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| o-Xylene | ND | *- *1 | 0.0056 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| sec-Butylbenzene | ND | *- *1 | 0.0034 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Styrene | ND | *- *1 | 0.0034 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| t-Butylbenzene | ND | *- *1 | 0.0034 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Tetrachloroethene | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Toluene | ND | *- *1 | 0.011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| trans-1,2-Dichloroethene | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| trans-1,3-Dichloropropene | ND | *- | 0.011 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Trichloroethene | ND | *- *1 | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Trichlorofluoromethane | ND | | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |
| Vinyl chloride | ND | | 0.0022 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 15:52 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *96* | | *80 - 121* | *04/28/22 11:00* | *05/09/22 15:52* | *1* |
| *4-Bromofluorobenzene (Surr)* | *100* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 15:52* | *1* |
| *Dibromofluoromethane (Surr)* | *103* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 15:52* | *1* |
| *Toluene-d8 (Surr)* | *92* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 15:52* | *1* |

## Method: 8260D - Volatile Organic Compounds by GC/MS - RA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | H | 0.0041 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,1,1-Trichloroethane | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | H *+ | 0.0054 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,1,2-Trichloroethane | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,1-Dichloroethane | ND | H *+ | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,1-Dichloroethene | ND | H | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,1-Dichloropropene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,2,3-Trichlorobenzene | ND | H | 0.0041 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,2,3-Trichloropropane | ND | H *+ | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,2,4-Trichlorobenzene | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,2,4-Trimethylbenzene | ND | H *+ | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | H *+ | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,2-Dibromoethane | ND | H *+ | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,2-Dichlorobenzene | ND | H *+ | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,2-Dichloroethane | ND | H *+ | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,2-Dichloropropane | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,3,5-Trimethylbenzene | ND | H *+ | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,3-Dichlorobenzene | ND | H *+ | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,3-Dichloropropane | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 1,4-Dichlorobenzene | ND | H *+ | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 2,2-Dichloropropane | ND | H *+ | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 2-Chlorotoluene | ND | H *+ | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 4-Chlorotoluene | ND | H *+ | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| 4-Isopropyltoluene | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Benzene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Bromobenzene | ND | H *+ | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Bromochloromethane | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Bromodichloromethane | ND | H *+ | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Bromoform | ND | H | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Bromomethane | ND | H *- | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |

**Client Sample ID: SS-4-S1-0.5**
**Date Collected: 04/27/22 12:15**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-4**
**Matrix: Solid**
**Percent Solids: 79.3**

## Method: 8260D - Volatile Organic Compounds by GC/MS - RA (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Carbon tetrachloride | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Chlorobenzene | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Chloroethane | ND | H | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Chloroform | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Chloromethane | ND | H | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| cis-1,2-Dichloroethene | ND | H | 0.0041 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| cis-1,3-Dichloropropene | ND | H *+ | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Dibromochloromethane | ND | H *+ | 0.0020 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Dibromomethane | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Dichlorodifluoromethane | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Ethylbenzene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Hexachlorobutadiene | ND | H | 0.0041 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Isopropylbenzene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Methyl tert-butyl ether | ND | H *+ | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Methylene Chloride | ND | H | 0.054 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| m-Xylene & p-Xylene | ND | H *+ | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Naphthalene | ND | H *+ | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| n-Butylbenzene | ND | H | 0.0041 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| N-Propylbenzene | ND | H *+ | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| o-Xylene | ND | H *+ | 0.0068 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| sec-Butylbenzene | ND | H *+ | 0.0041 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Styrene | ND | H *+ | 0.0041 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| t-Butylbenzene | ND | H | 0.0041 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Tetrachloroethene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Toluene | ND | H | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| trans-1,2-Dichloroethene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| trans-1,3-Dichloropropene | ND | H *+ | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Trichloroethene | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Trichlorofluoromethane | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |
| Vinyl chloride | ND | H | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:36 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *160* | *S1+* | *80 - 121* | *04/28/22 11:00* | *05/17/22 13:36* | *1* |
| *4-Bromofluorobenzene (Surr)* | *78* | *S1-* | *80 - 120* | *04/28/22 11:00* | *05/17/22 13:36* | *1* |
| *Dibromofluoromethane (Surr)* | *96* | | *80 - 120* | *04/28/22 11:00* | *05/17/22 13:36* | *1* |
| *Toluene-d8 (Surr)* | *88* | | *80 - 120* | *04/28/22 11:00* | *05/17/22 13:36* | *1* |

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | | 4.7 | | mg/Kg | ☼ | 05/07/22 12:31 | 05/07/22 15:46 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *92* | | *66 - 125* | *05/07/22 12:31* | *05/07/22 15:46* | *1* |

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| 2-Methylnaphthalene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Acenaphthene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Acenaphthylene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |

## Client Sample ID: SS-4-S1-0.5

**Date Collected: 04/27/22 12:15**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-4

**Matrix: Solid**
**Percent Solids: 79.3**

### Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Anthracene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Benzo[a]anthracene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Benzo[a]pyrene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Benzo[b]fluoranthene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Benzo[k]fluoranthene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Chrysene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Fluoranthene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Fluorene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Naphthalene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Phenanthrene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |
| Pyrene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 15:50 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *125* | | *57 - 145* | *05/11/22 16:47* | *05/13/22 15:50* | *1* |

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 62 | | mg/Kg | ☼ | 05/10/22 13:16 | 05/12/22 16:59 | 1 |
| Motor Oil (>C24-C36) | ND | | 62 | | mg/Kg | ☼ | 05/10/22 13:16 | 05/12/22 16:59 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *105* | | *50 - 150* | *05/10/22 13:16* | *05/12/22 16:59* | *1* |

### Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **2.8** | | 0.51 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:37 | 10 |
| **Barium** | **38** | | 1.0 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:37 | 10 |
| Cadmium | ND | | 0.82 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:37 | 10 |
| **Chromium** | **16** | | 1.0 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:37 | 10 |
| **Copper** | **51** | | 1.0 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:37 | 10 |
| **Lead** | **2.5** | | 0.51 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:37 | 10 |
| **Nickel** | **16** | | 0.51 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:37 | 10 |
| **Selenium** | **2.2** | | 1.5 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:37 | 10 |
| Silver | ND | | 0.20 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:37 | 10 |
| **Zinc** | **51** | | 5.6 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:37 | 10 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.032 | | mg/Kg | ☼ | 05/09/22 10:43 | 05/09/22 20:22 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | ND | | 0.50 | | mg/Kg | ☼ | 05/05/22 21:18 | 05/10/22 00:30 | 1 |
| **Cr (III)** | **16** | | 0.011 | | mg/Kg | | | 05/12/22 02:35 | 1 |
| Total Organic Carbon - Average Dup | ND | | 2000 | | mg/Kg | | | 05/11/22 14:03 | 1 |

| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Solids** | **79.3** | | 0.1 | | % | | | 05/10/22 13:38 | 1 |
| **Percent Moisture** | **20.7** | | 0.1 | | % | | | 05/10/22 13:38 | 1 |

## Client Sample ID: SS-8-S1-0.5

**Date Collected: 04/27/22 15:20**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-5

**Matrix: Solid**
**Percent Solids: 86.5**

### Method: 8260D - Volatile Organic Compounds by GC/MS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | *- *1 | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,1,1-Trichloroethane | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.0036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,1,2-Trichloroethane | ND | *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,1-Dichloroethane | ND | *- *1 | 0.00090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,1-Dichloroethene | ND | *- *1 | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,1-Dichloropropene | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,2,3-Trichloropropane | ND | | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,2,4-Trimethylbenzene | ND | *- *1 | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,2-Dibromoethane | ND | | 0.00090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,2-Dichlorobenzene | ND | *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,2-Dichloroethane | ND | | 0.00090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,2-Dichloropropane | ND | *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,3,5-Trimethylbenzene | ND | *- *1 | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,3-Dichlorobenzene | ND | *- *1 | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,3-Dichloropropane | ND | *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 1,4-Dichlorobenzene | ND | *- *1 | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 2,2-Dichloropropane | ND | *- *1 | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 2-Chlorotoluene | ND | *- *1 | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 4-Chlorotoluene | ND | *1 | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| 4-Isopropyltoluene | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Benzene | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Bromobenzene | ND | *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Bromochloromethane | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Bromodichloromethane | ND | *- *1 | 0.00090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Bromoform | ND | | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Bromomethane | ND | | 0.00090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Carbon tetrachloride | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Chlorobenzene | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Chloroethane | ND | | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Chloroform | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Chloromethane | ND | | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| cis-1,2-Dichloroethene | ND | *1 | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| cis-1,3-Dichloropropene | ND | *- *1 | 0.00090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Dibromochloromethane | ND | | 0.0013 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Dibromomethane | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Dichlorodifluoromethane | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Ethylbenzene | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Hexachlorobutadiene | ND | | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Isopropylbenzene | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Methyl tert-butyl ether | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Methylene Chloride | ND | *- *1 | 0.036 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| m-Xylene & p-Xylene | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Naphthalene | ND | | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| n-Butylbenzene | ND | *- | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| N-Propylbenzene | ND | *- *1 | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |

**Client Sample ID: SS-8-S1-0.5**
**Date Collected: 04/27/22 15:20**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-5**
**Matrix: Solid**
**Percent Solids: 86.5**

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| o-Xylene | ND | *- *1 | 0.0045 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| sec-Butylbenzene | ND | *- *1 | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Styrene | ND | *- *1 | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| t-Butylbenzene | ND | *- *1 | 0.0027 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Tetrachloroethene | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Toluene | ND | *- *1 | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| trans-1,2-Dichloroethene | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| trans-1,3-Dichloropropene | ND | *- | 0.0090 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Trichloroethene | ND | *- *1 | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Trichlorofluoromethane | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |
| Vinyl chloride | ND | | 0.0018 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:14 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *97* | | *80 - 121* | *04/28/22 11:00* | *05/09/22 16:14* | *1* |
| *4-Bromofluorobenzene (Surr)* | *98* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 16:14* | *1* |
| *Dibromofluoromethane (Surr)* | *109* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 16:14* | *1* |
| *Toluene-d8 (Surr)* | *86* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 16:14* | *1* |

## Method: 8260D - Volatile Organic Compounds by GC/MS - RA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | H | 0.0047 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,1,1-Trichloroethane | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | H *+ | 0.0062 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,1,2-Trichloroethane | ND | H *+ | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,1-Dichloroethane | ND | H *+ | 0.0016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,1-Dichloroethene | ND | H | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,1-Dichloropropene | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,2,3-Trichlorobenzene | ND | H | 0.0047 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,2,3-Trichloropropane | ND | H *+ | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,2,4-Trichlorobenzene | ND | H *+ | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,2,4-Trimethylbenzene | ND | H *+ | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | H *+ | 0.016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,2-Dibromoethane | ND | H *+ | 0.0016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,2-Dichlorobenzene | ND | H *+ | 0.016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,2-Dichloroethane | ND | H *+ | 0.0016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,2-Dichloropropane | ND | H *+ | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,3,5-Trimethylbenzene | ND | H *+ | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,3-Dichlorobenzene | ND | H *+ | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,3-Dichloropropane | ND | H *+ | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 1,4-Dichlorobenzene | ND | H *+ | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 2,2-Dichloropropane | ND | H *+ | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 2-Chlorotoluene | ND | H *+ | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 4-Chlorotoluene | ND | H *+ | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| 4-Isopropyltoluene | ND | H *+ | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Benzene | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Bromobenzene | ND | H *+ | 0.016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Bromochloromethane | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Bromodichloromethane | ND | H *+ | 0.0016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Bromoform | ND | H | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Bromomethane | ND | H *- | 0.0016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |

**Client Sample ID: SS-8-S1-0.5**
**Date Collected: 04/27/22 15:20**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-5**
**Matrix: Solid**
**Percent Solids: 86.5**

## Method: 8260D - Volatile Organic Compounds by GC/MS - RA (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Carbon tetrachloride | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Chlorobenzene | ND | H *+ | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Chloroethane | ND | H | 0.016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Chloroform | ND | H *+ | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Chloromethane | ND | H | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| cis-1,2-Dichloroethene | ND | H | 0.0047 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| cis-1,3-Dichloropropene | ND | H *+ | 0.0016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Dibromochloromethane | ND | H *+ | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Dibromomethane | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Dichlorodifluoromethane | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Ethylbenzene | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Hexachlorobutadiene | ND | H | 0.0047 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Isopropylbenzene | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Methyl tert-butyl ether | ND | H *+ | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Methylene Chloride | ND | H | 0.062 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| m-Xylene & p-Xylene | ND | H *+ | 0.016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Naphthalene | ND | H *+ | 0.016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| n-Butylbenzene | ND | H | 0.0047 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| N-Propylbenzene | ND | H *+ | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| o-Xylene | ND | H *+ | 0.0078 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| sec-Butylbenzene | ND | H *+ | 0.0047 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Styrene | ND | H *+ | 0.0047 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| t-Butylbenzene | ND | H | 0.0047 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Tetrachloroethene | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Toluene | ND | H | 0.016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| trans-1,2-Dichloroethene | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| trans-1,3-Dichloropropene | ND | H *+ | 0.016 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Trichloroethene | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Trichlorofluoromethane | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |
| Vinyl chloride | ND | H | 0.0031 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 13:58 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *154* | *S1+* | *80 - 121* | *04/28/22 11:00* | *05/17/22 13:58* | *1* |
| *4-Bromofluorobenzene (Surr)* | *70* | *S1-* | *80 - 120* | *04/28/22 11:00* | *05/17/22 13:58* | *1* |
| *Dibromofluoromethane (Surr)* | *97* | | *80 - 120* | *04/28/22 11:00* | *05/17/22 13:58* | *1* |
| *Toluene-d8 (Surr)* | *91* | | *80 - 120* | *04/28/22 11:00* | *05/17/22 13:58* | *1* |

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | | 6.8 | | mg/Kg | ☼ | 05/07/22 12:31 | 05/07/22 16:09 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *92* | | *66 - 125* | *05/07/22 12:31* | *05/07/22 16:09* | *1* |

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| 2-Methylnaphthalene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Acenaphthene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Acenaphthylene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

**Client Sample ID: SS-8-S1-0.5**
**Date Collected: 04/27/22 15:20**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-5**
**Matrix: Solid**
**Percent Solids: 86.5**

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Anthracene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Benzo[a]anthracene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Benzo[a]pyrene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Benzo[b]fluoranthene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Benzo[k]fluoranthene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| **Chrysene** | **0.0053** | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Fluoranthene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Fluorene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Naphthalene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| Phenanthrene | ND | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |
| **Pyrene** | **0.0059** | | 0.0049 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:15 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *131* | | *57 - 145* | *05/11/22 16:47* | *05/13/22 16:15* | *1* |

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 53 | | mg/Kg | ☼ | 05/10/22 13:16 | 05/12/22 17:19 | 1 |
| Motor Oil (>C24-C36) | ND | | 53 | | mg/Kg | ☼ | 05/10/22 13:16 | 05/12/22 17:19 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *104* | | *50 - 150* | *05/10/22 13:16* | *05/12/22 17:19* | *1* |

## Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **1.9** | | 0.41 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:22 | 10 |
| **Barium** | **31** | | 0.82 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:22 | 10 |
| Cadmium | ND | | 0.66 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:22 | 10 |
| **Chromium** | **12** | | 0.82 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:22 | 10 |
| **Copper** | **42** | | 0.82 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:22 | 10 |
| **Lead** | **12** | | 0.41 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:22 | 10 |
| **Nickel** | **10** | | 0.41 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:22 | 10 |
| **Selenium** | **2.6** | | 1.2 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:22 | 10 |
| Silver | ND | | 0.16 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:22 | 10 |
| **Zinc** | **55** | | 4.5 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:22 | 10 |

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.027 | | mg/Kg | ☼ | 05/09/22 10:43 | 05/09/22 20:25 | 1 |

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | ND | | 0.50 | | mg/Kg | ☼ | 05/05/22 21:18 | 05/10/22 00:30 | 1 |
| **Cr (III)** | **12** | | 0.011 | | mg/Kg | | | 05/12/22 02:35 | 1 |
| Total Organic Carbon - Average Dup | ND | | 2000 | | mg/Kg | | | 05/11/22 14:07 | 1 |

| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Solids** | **86.5** | | 0.1 | | % | | | 05/10/22 13:38 | 1 |
| **Percent Moisture** | **13.5** | | 0.1 | | % | | | 05/10/22 13:38 | 1 |

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

## Client Sample ID: SS-11-S1-0.5

**Date Collected: 04/27/22 15:40**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-6

**Matrix: Solid**
**Percent Solids: 81.5**

### Method: 8260D - Volatile Organic Compounds by GC/MS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | *- *1 | 0.0042 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,1,1-Trichloroethane | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.0057 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,1,2-Trichloroethane | ND | *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,1-Dichloroethane | ND | *- *1 | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,1-Dichloroethene | ND | *- *1 | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,1-Dichloropropene | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 0.0042 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,2,3-Trichloropropane | ND | | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,2,4-Trimethylbenzene | ND | *- *1 | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,2-Dibromoethane | ND | | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,2-Dichlorobenzene | ND | *1 | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,2-Dichloroethane | ND | | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,2-Dichloropropane | ND | *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,3,5-Trimethylbenzene | ND | *- *1 | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,3-Dichlorobenzene | ND | *- *1 | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,3-Dichloropropane | ND | *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 1,4-Dichlorobenzene | ND | *- *1 | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 2,2-Dichloropropane | ND | *- *1 | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 2-Chlorotoluene | ND | *- *1 | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 4-Chlorotoluene | ND | *1 | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| 4-Isopropyltoluene | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Benzene | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Bromobenzene | ND | *1 | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Bromochloromethane | ND | | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Bromodichloromethane | ND | *- *1 | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Bromoform | ND | | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Bromomethane | ND | | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Carbon tetrachloride | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Chlorobenzene | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Chloroethane | ND | | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Chloroform | ND | | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Chloromethane | ND | | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| cis-1,2-Dichloroethene | ND | *1 | 0.0042 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| cis-1,3-Dichloropropene | ND | *- *1 | 0.0014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Dibromochloromethane | ND | | 0.0021 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Dibromomethane | ND | | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Dichlorodifluoromethane | ND | | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Ethylbenzene | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Hexachlorobutadiene | ND | | 0.0042 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Isopropylbenzene | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Methyl tert-butyl ether | ND | | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Methylene Chloride | ND | *- *1 | 0.057 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| m-Xylene & p-Xylene | ND | *- *1 | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Naphthalene | ND | | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| n-Butylbenzene | ND | *- | 0.0042 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| N-Propylbenzene | ND | *- *1 | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |

**Client Sample ID: SS-11-S1-0.5**
**Date Collected: 04/27/22 15:40**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-6**
**Matrix: Solid**
**Percent Solids: 81.5**

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| o-Xylene | ND | *- *1 | 0.0071 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| sec-Butylbenzene | ND | *- *1 | 0.0042 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Styrene | ND | *- *1 | 0.0042 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| t-Butylbenzene | ND | *- *1 | 0.0042 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Tetrachloroethene | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Toluene | ND | *- *1 | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| trans-1,2-Dichloroethene | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| trans-1,3-Dichloropropene | ND | *- | 0.014 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Trichloroethene | ND | *- *1 | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Trichlorofluoromethane | ND | | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |
| Vinyl chloride | ND | | 0.0028 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/09/22 16:37 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *109* | | *80 - 121* | *04/28/22 11:00* | *05/09/22 16:37* | *1* |
| *4-Bromofluorobenzene (Surr)* | *101* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 16:37* | *1* |
| *Dibromofluoromethane (Surr)* | *109* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 16:37* | *1* |
| *Toluene-d8 (Surr)* | *94* | | *80 - 120* | *04/28/22 11:00* | *05/09/22 16:37* | *1* |

## Method: 8260D - Volatile Organic Compounds by GC/MS - RA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | H | 0.0035 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,1,1-Trichloroethane | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | H *+ | 0.0046 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,1,2-Trichloroethane | ND | H *+ | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,1-Dichloroethane | ND | H *+ | 0.0012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,1-Dichloroethene | ND | H | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,1-Dichloropropene | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,2,3-Trichlorobenzene | ND | H | 0.0035 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,2,3-Trichloropropane | ND | H *+ | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,2,4-Trichlorobenzene | ND | H *+ | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,2,4-Trimethylbenzene | ND | H *+ | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | H *+ | 0.012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,2-Dibromoethane | ND | H *+ | 0.0012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,2-Dichlorobenzene | ND | H *+ | 0.012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,2-Dichloroethane | ND | H *+ | 0.0012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,2-Dichloropropane | ND | H *+ | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,3,5-Trimethylbenzene | ND | H *+ | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,3-Dichlorobenzene | ND | H *+ | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,3-Dichloropropane | ND | H *+ | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 1,4-Dichlorobenzene | ND | H *+ | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 2,2-Dichloropropane | ND | H *+ | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 2-Chlorotoluene | ND | H *+ | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 4-Chlorotoluene | ND | H *+ | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| 4-Isopropyltoluene | ND | H *+ | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Benzene | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Bromobenzene | ND | H *+ | 0.012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Bromochloromethane | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Bromodichloromethane | ND | H *+ | 0.0012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Bromoform | ND | H | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Bromomethane | ND | H *- | 0.0012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |

**Client Sample ID: SS-11-S1-0.5**
**Date Collected: 04/27/22 15:40**
**Date Received: 04/28/22 10:54**

**Lab Sample ID: 580-113209-6**
**Matrix: Solid**
**Percent Solids: 81.5**

## Method: 8260D - Volatile Organic Compounds by GC/MS - RA (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Carbon tetrachloride | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Chlorobenzene | ND | H *+ | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Chloroethane | ND | H | 0.012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Chloroform | ND | H *+ | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Chloromethane | ND | H | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| cis-1,2-Dichloroethene | ND | H | 0.0035 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| cis-1,3-Dichloropropene | ND | H *+ | 0.0012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Dibromochloromethane | ND | H *+ | 0.0017 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Dibromomethane | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Dichlorodifluoromethane | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Ethylbenzene | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Hexachlorobutadiene | ND | H | 0.0035 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Isopropylbenzene | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Methyl tert-butyl ether | ND | H *+ | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Methylene Chloride | ND | H | 0.046 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| m-Xylene & p-Xylene | ND | H *+ | 0.012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Naphthalene | ND | H *+ | 0.012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| n-Butylbenzene | ND | H | 0.0035 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| N-Propylbenzene | ND | H *+ | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| o-Xylene | ND | H *+ | 0.0058 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| sec-Butylbenzene | ND | H *+ | 0.0035 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Styrene | ND | H *+ | 0.0035 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| t-Butylbenzene | ND | H | 0.0035 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Tetrachloroethene | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Toluene | ND | H | 0.012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| trans-1,2-Dichloroethene | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| trans-1,3-Dichloropropene | ND | H *+ | 0.012 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Trichloroethene | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Trichlorofluoromethane | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |
| Vinyl chloride | ND | H | 0.0023 | | mg/Kg | ☼ | 04/28/22 11:00 | 05/17/22 14:21 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *157* | *S1+* | *80 - 121* | *04/28/22 11:00* | *05/17/22 14:21* | *1* |
| *4-Bromofluorobenzene (Surr)* | *74* | *S1-* | *80 - 120* | *04/28/22 11:00* | *05/17/22 14:21* | *1* |
| *Dibromofluoromethane (Surr)* | *100* | | *80 - 120* | *04/28/22 11:00* | *05/17/22 14:21* | *1* |
| *Toluene-d8 (Surr)* | *95* | | *80 - 120* | *04/28/22 11:00* | *05/17/22 14:21* | *1* |

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | | 5.7 | | mg/Kg | ☼ | 05/07/22 12:31 | 05/07/22 16:31 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *93* | | *66 - 125* | *05/07/22 12:31* | *05/07/22 16:31* | *1* |

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| 2-Methylnaphthalene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Acenaphthene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Acenaphthylene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |

## Client Sample ID: SS-11-S1-0.5

**Date Collected: 04/27/22 15:40**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-6

**Matrix: Solid**
**Percent Solids: 81.5**

### Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Anthracene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Benzo[a]anthracene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Benzo[a]pyrene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Benzo[b]fluoranthene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Benzo[k]fluoranthene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Chrysene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Fluoranthene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Fluorene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Naphthalene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Phenanthrene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |
| Pyrene | ND | | 0.0053 | | mg/Kg | ☼ | 05/11/22 16:47 | 05/13/22 16:40 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *127* | | *57 - 145* | *05/11/22 16:47* | *05/13/22 16:40* | *1* |

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 60 | | mg/Kg | ☼ | 05/10/22 13:16 | 05/12/22 14:18 | 1 |
| Motor Oil (>C24-C36) | ND | | 60 | | mg/Kg | ☼ | 05/10/22 13:16 | 05/12/22 14:18 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *107* | | *50 - 150* | *05/10/22 13:16* | *05/12/22 14:18* | *1* |

### Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **2.6** | | 0.47 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:26 | 10 |
| **Barium** | **27** | | 0.93 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:26 | 10 |
| Cadmium | ND | | 0.75 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:26 | 10 |
| **Chromium** | **8.5** | | 0.93 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:26 | 10 |
| **Copper** | **48** | | 0.93 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:26 | 10 |
| **Lead** | **2.6** | | 0.47 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:26 | 10 |
| **Nickel** | **9.6** | | 0.47 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:26 | 10 |
| **Selenium** | **2.8** | | 1.4 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:26 | 10 |
| Silver | ND | | 0.19 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:26 | 10 |
| **Zinc** | **50** | | 5.1 | | mg/Kg | ☼ | 05/06/22 10:51 | 05/09/22 17:26 | 10 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.035 | | mg/Kg | ☼ | 05/09/22 10:43 | 05/09/22 20:27 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | ND | | 0.49 | | mg/Kg | ☼ | 05/05/22 21:18 | 05/10/22 00:30 | 1 |
| **Cr (III)** | **8.5** | | 0.011 | | mg/Kg | | | 05/19/22 11:26 | 1 |
| Total Organic Carbon - Average Dup | ND | | 2000 | | mg/Kg | | | 05/11/22 14:12 | 1 |

| Analyte | Result | Qualifier | RL | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Solids** | **81.5** | | 0.1 | | % | | | 05/10/22 13:38 | 1 |
| **Percent Moisture** | **18.5** | | 0.1 | | % | | | 05/10/22 13:38 | 1 |

## Method: 8260D - Volatile Organic Compounds by GC/MS

**Lab Sample ID: MB 580-389935/1-A**
**Matrix: Solid**
**Analysis Batch: 390212**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 389935**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | | 0.0030 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.0040 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,1-Dichloroethane | ND | | 0.0010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,1-Dichloroethene | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,1-Dichloropropene | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 0.0030 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,2,3-Trichloropropane | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 0.010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,2-Dibromoethane | ND | | 0.0010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,2-Dichloroethane | ND | | 0.0010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,2-Dichloropropane | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,3-Dichloropropane | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 2,2-Dichloropropane | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 2-Chlorotoluene | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 4-Chlorotoluene | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| 4-Isopropyltoluene | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Benzene | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Bromobenzene | ND | | 0.010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Bromochloromethane | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Bromodichloromethane | ND | | 0.0010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Bromoform | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Bromomethane | ND | | 0.0010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Carbon tetrachloride | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Chlorobenzene | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Chloroethane | ND | | 0.010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Chloroform | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Chloromethane | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| cis-1,2-Dichloroethene | ND | | 0.0030 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.0010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Dibromochloromethane | ND | | 0.0015 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Dibromomethane | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Dichlorodifluoromethane | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Ethylbenzene | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Hexachlorobutadiene | ND | | 0.0030 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Isopropylbenzene | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Methyl tert-butyl ether | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Methylene Chloride | ND | | 0.040 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| m-Xylene & p-Xylene | ND | | 0.010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Naphthalene | ND | | 0.010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| n-Butylbenzene | ND | | 0.0030 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: MB 580-389935/1-A**
**Matrix: Solid**
**Analysis Batch: 390212**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 389935**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| N-Propylbenzene | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| o-Xylene | ND | | 0.0050 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| sec-Butylbenzene | ND | | 0.0030 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Styrene | ND | | 0.0030 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| t-Butylbenzene | ND | | 0.0030 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Tetrachloroethene | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Toluene | ND | | 0.010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.010 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Trichloroethene | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Trichlorofluoromethane | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |
| Vinyl chloride | ND | | 0.0020 | | mg/Kg | | 05/09/22 11:06 | 05/09/22 14:22 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *89* | | *80 - 121* | *05/09/22 11:06* | *05/09/22 14:22* | *1* |
| *4-Bromofluorobenzene (Surr)* | *102* | | *80 - 120* | *05/09/22 11:06* | *05/09/22 14:22* | *1* |
| *Dibromofluoromethane (Surr)* | *104* | | *80 - 120* | *05/09/22 11:06* | *05/09/22 14:22* | *1* |
| *Toluene-d8 (Surr)* | *91* | | *80 - 120* | *05/09/22 11:06* | *05/09/22 14:22* | *1* |

**Lab Sample ID: LCS 580-389935/2-A**
**Matrix: Solid**
**Analysis Batch: 390212**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 389935**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.0200 | 0.0176 | | mg/Kg | | 88 | 79 - 128 |
| 1,1,1-Trichloroethane | 0.0200 | 0.0163 | | mg/Kg | | 82 | 78 - 135 |
| 1,1,2,2-Tetrachloroethane | 0.0200 | 0.0181 | | mg/Kg | | 91 | 77 - 122 |
| 1,1,2-Trichloroethane | 0.0200 | 0.0199 | | mg/Kg | | 100 | 80 - 123 |
| 1,1-Dichloroethane | 0.0200 | 0.0191 | | mg/Kg | | 96 | 78 - 126 |
| 1,1-Dichloroethene | 0.0200 | 0.0191 | | mg/Kg | | 95 | 73 - 134 |
| 1,1-Dichloropropene | 0.0200 | 0.0162 | | mg/Kg | | 81 | 76 - 140 |
| 1,2,3-Trichlorobenzene | 0.0200 | 0.0201 | | mg/Kg | | 100 | 58 - 146 |
| 1,2,3-Trichloropropane | 0.0200 | 0.0198 | | mg/Kg | | 99 | 77 - 127 |
| 1,2,4-Trichlorobenzene | 0.0200 | 0.0191 | | mg/Kg | | 95 | 74 - 131 |
| 1,2,4-Trimethylbenzene | 0.0200 | 0.0192 | | mg/Kg | | 96 | 73 - 138 |
| 1,2-Dibromo-3-Chloropropane | 0.0200 | 0.0180 | | mg/Kg | | 90 | 64 - 129 |
| 1,2-Dibromoethane | 0.0200 | 0.0190 | | mg/Kg | | 95 | 77 - 123 |
| 1,2-Dichlorobenzene | 0.0200 | 0.0197 | | mg/Kg | | 99 | 78 - 126 |
| 1,2-Dichloroethane | 0.0200 | 0.0184 | | mg/Kg | | 92 | 76 - 124 |
| 1,2-Dichloropropane | 0.0200 | 0.0200 | | mg/Kg | | 100 | 73 - 130 |
| 1,3,5-Trimethylbenzene | 0.0200 | 0.0188 | | mg/Kg | | 94 | 72 - 134 |
| 1,3-Dichlorobenzene | 0.0200 | 0.0197 | | mg/Kg | | 99 | 78 - 132 |
| 1,3-Dichloropropane | 0.0200 | 0.0199 | | mg/Kg | | 99 | 80 - 120 |
| 1,4-Dichlorobenzene | 0.0200 | 0.0188 | | mg/Kg | | 94 | 77 - 123 |
| 2,2-Dichloropropane | 0.0200 | 0.0183 | | mg/Kg | | 92 | 75 - 134 |
| 2-Chlorotoluene | 0.0200 | 0.0197 | | mg/Kg | | 98 | 77 - 134 |
| 4-Chlorotoluene | 0.0200 | 0.0216 | | mg/Kg | | 108 | 71 - 137 |
| 4-Isopropyltoluene | 0.0200 | 0.0192 | | mg/Kg | | 96 | 71 - 142 |

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCS 580-389935/2-A**
**Matrix: Solid**
**Analysis Batch: 390212**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 389935**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Benzene | 0.0200 | 0.0181 | | mg/Kg | | 90 | 79 - 135 |
| Bromobenzene | 0.0200 | 0.0204 | | mg/Kg | | 102 | 78 - 126 |
| Bromochloromethane | 0.0200 | 0.0194 | | mg/Kg | | 97 | 76 - 131 |
| Bromodichloromethane | 0.0200 | 0.0185 | | mg/Kg | | 92 | 78 - 125 |
| Bromoform | 0.0200 | 0.0187 | | mg/Kg | | 93 | 71 - 130 |
| Bromomethane | 0.0200 | 0.0144 | | mg/Kg | | 72 | 55 - 150 |
| Carbon tetrachloride | 0.0200 | 0.0182 | | mg/Kg | | 91 | 76 - 140 |
| Chlorobenzene | 0.0200 | 0.0191 | | mg/Kg | | 96 | 80 - 125 |
| Chloroethane | 0.0200 | 0.0188 | | mg/Kg | | 94 | 26 - 150 |
| Chloroform | 0.0200 | 0.0199 | | mg/Kg | | 99 | 74 - 133 |
| Chloromethane | 0.0200 | 0.0162 | | mg/Kg | | 81 | 52 - 142 |
| cis-1,2-Dichloroethene | 0.0200 | 0.0208 | | mg/Kg | | 104 | 80 - 125 |
| cis-1,3-Dichloropropene | 0.0200 | 0.0176 | | mg/Kg | | 88 | 80 - 122 |
| Dibromochloromethane | 0.0200 | 0.0184 | | mg/Kg | | 92 | 75 - 125 |
| Dibromomethane | 0.0200 | 0.0211 | | mg/Kg | | 106 | 72 - 130 |
| Dichlorodifluoromethane | 0.0200 | 0.0180 | | mg/Kg | | 90 | 33 - 150 |
| Ethylbenzene | 0.0200 | 0.0177 | | mg/Kg | | 88 | 80 - 135 |
| Hexachlorobutadiene | 0.0200 | 0.0172 | | mg/Kg | | 86 | 65 - 145 |
| Isopropylbenzene | 0.0200 | 0.0165 | | mg/Kg | | 82 | 80 - 131 |
| Methyl tert-butyl ether | 0.0200 | 0.0188 | | mg/Kg | | 94 | 71 - 126 |
| Methylene Chloride | 0.0200 | 0.0119 | J | mg/Kg | | 59 | 56 - 140 |
| m-Xylene & p-Xylene | 0.0200 | 0.0176 | | mg/Kg | | 88 | 80 - 132 |
| Naphthalene | 0.0200 | 0.0198 | | mg/Kg | | 99 | 56 - 145 |
| n-Butylbenzene | 0.0200 | 0.0182 | | mg/Kg | | 91 | 69 - 143 |
| N-Propylbenzene | 0.0200 | 0.0194 | | mg/Kg | | 97 | 78 - 133 |
| o-Xylene | 0.0200 | 0.0172 | | mg/Kg | | 86 | 80 - 132 |
| sec-Butylbenzene | 0.0200 | 0.0182 | | mg/Kg | | 91 | 71 - 143 |
| Styrene | 0.0200 | 0.0181 | | mg/Kg | | 90 | 79 - 129 |
| t-Butylbenzene | 0.0200 | 0.0188 | | mg/Kg | | 94 | 72 - 144 |
| Tetrachloroethene | 0.0200 | 0.0188 | | mg/Kg | | 94 | 75 - 141 |
| Toluene | 0.0200 | 0.0173 | | mg/Kg | | 86 | 75 - 125 |
| trans-1,2-Dichloroethene | 0.0200 | 0.0190 | | mg/Kg | | 95 | 77 - 134 |
| trans-1,3-Dichloropropene | 0.0200 | 0.0176 | | mg/Kg | | 88 | 80 - 121 |
| Trichloroethene | 0.0200 | 0.0193 | | mg/Kg | | 96 | 80 - 134 |
| Trichlorofluoromethane | 0.0200 | 0.0171 | | mg/Kg | | 86 | 71 - 150 |
| Vinyl chloride | 0.0200 | 0.0158 | | mg/Kg | | 79 | 62 - 144 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *98* | | *80 - 121* |
| *4-Bromofluorobenzene (Surr)* | *94* | | *80 - 120* |
| *Dibromofluoromethane (Surr)* | *104* | | *80 - 120* |
| *Toluene-d8 (Surr)* | *95* | | *80 - 120* |

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCSD 580-389935/3-A**
**Matrix: Solid**
**Analysis Batch: 390212**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 389935**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.0200 | 0.0142 | *- *1 | mg/Kg | | 71 | 79 - 128 | 21 | 20 |
| 1,1,1-Trichloroethane | 0.0200 | 0.0121 | *- *1 | mg/Kg | | 61 | 78 - 135 | 30 | 20 |
| 1,1,2,2-Tetrachloroethane | 0.0200 | 0.0159 | | mg/Kg | | 79 | 77 - 122 | 13 | 20 |
| 1,1,2-Trichloroethane | 0.0200 | 0.0160 | *1 | mg/Kg | | 80 | 80 - 123 | 22 | 20 |
| 1,1-Dichloroethane | 0.0200 | 0.0154 | *- *1 | mg/Kg | | 77 | 78 - 126 | 22 | 20 |
| 1,1-Dichloroethene | 0.0200 | 0.0134 | *- *1 | mg/Kg | | 67 | 73 - 134 | 35 | 25 |
| 1,1-Dichloropropene | 0.0200 | 0.0128 | *- *1 | mg/Kg | | 64 | 76 - 140 | 23 | 20 |
| 1,2,3-Trichlorobenzene | 0.0200 | 0.0160 | | mg/Kg | | 80 | 58 - 146 | 22 | 28 |
| 1,2,3-Trichloropropane | 0.0200 | 0.0179 | | mg/Kg | | 89 | 77 - 127 | 10 | 20 |
| 1,2,4-Trichlorobenzene | 0.0200 | 0.0150 | | mg/Kg | | 75 | 74 - 131 | 24 | 26 |
| 1,2,4-Trimethylbenzene | 0.0200 | 0.0141 | *- *1 | mg/Kg | | 71 | 73 - 138 | 31 | 22 |
| 1,2-Dibromo-3-Chloropropane | 0.0200 | 0.0160 | | mg/Kg | | 80 | 64 - 129 | 12 | 40 |
| 1,2-Dibromoethane | 0.0200 | 0.0176 | | mg/Kg | | 88 | 77 - 123 | 8 | 20 |
| 1,2-Dichlorobenzene | 0.0200 | 0.0155 | *1 | mg/Kg | | 78 | 78 - 126 | 24 | 20 |
| 1,2-Dichloroethane | 0.0200 | 0.0163 | | mg/Kg | | 81 | 76 - 124 | 12 | 20 |
| 1,2-Dichloropropane | 0.0200 | 0.0145 | *1 | mg/Kg | | 73 | 73 - 130 | 32 | 20 |
| 1,3,5-Trimethylbenzene | 0.0200 | 0.0141 | *- *1 | mg/Kg | | 71 | 72 - 134 | 29 | 24 |
| 1,3-Dichlorobenzene | 0.0200 | 0.0144 | *- *1 | mg/Kg | | 72 | 78 - 132 | 31 | 20 |
| 1,3-Dichloropropane | 0.0200 | 0.0159 | *1 | mg/Kg | | 80 | 80 - 120 | 22 | 20 |
| 1,4-Dichlorobenzene | 0.0200 | 0.0145 | *- *1 | mg/Kg | | 73 | 77 - 123 | 25 | 20 |
| 2,2-Dichloropropane | 0.0200 | 0.0135 | *- *1 | mg/Kg | | 68 | 75 - 134 | 30 | 20 |
| 2-Chlorotoluene | 0.0200 | 0.0141 | *- *1 | mg/Kg | | 71 | 77 - 134 | 33 | 21 |
| 4-Chlorotoluene | 0.0200 | 0.0158 | *1 | mg/Kg | | 79 | 71 - 137 | 31 | 21 |
| 4-Isopropyltoluene | 0.0200 | 0.0140 | *- *1 | mg/Kg | | 70 | 71 - 142 | 31 | 29 |
| Benzene | 0.0200 | 0.0139 | *- *1 | mg/Kg | | 69 | 79 - 135 | 26 | 20 |
| Bromobenzene | 0.0200 | 0.0156 | *1 | mg/Kg | | 78 | 78 - 126 | 27 | 20 |
| Bromochloromethane | 0.0200 | 0.0178 | | mg/Kg | | 89 | 76 - 131 | 8 | 20 |
| Bromodichloromethane | 0.0200 | 0.0143 | *- *1 | mg/Kg | | 72 | 78 - 125 | 25 | 20 |
| Bromoform | 0.0200 | 0.0166 | | mg/Kg | | 83 | 71 - 130 | 12 | 20 |
| Bromomethane | 0.0200 | 0.0122 | | mg/Kg | | 61 | 55 - 150 | 16 | 26 |
| Carbon tetrachloride | 0.0200 | 0.0132 | *- *1 | mg/Kg | | 66 | 76 - 140 | 32 | 20 |
| Chlorobenzene | 0.0200 | 0.0150 | *- *1 | mg/Kg | | 75 | 80 - 125 | 24 | 20 |
| Chloroethane | 0.0200 | 0.0175 | | mg/Kg | | 88 | 26 - 150 | 7 | 40 |
| Chloroform | 0.0200 | 0.0170 | | mg/Kg | | 85 | 74 - 133 | 16 | 20 |
| Chloromethane | 0.0200 | 0.0179 | | mg/Kg | | 89 | 52 - 142 | 10 | 40 |
| cis-1,2-Dichloroethene | 0.0200 | 0.0168 | *1 | mg/Kg | | 84 | 80 - 125 | 21 | 20 |
| cis-1,3-Dichloropropene | 0.0200 | 0.0141 | *- *1 | mg/Kg | | 71 | 80 - 122 | 22 | 20 |
| Dibromochloromethane | 0.0200 | 0.0159 | | mg/Kg | | 79 | 75 - 125 | 15 | 20 |
| Dibromomethane | 0.0200 | 0.0182 | | mg/Kg | | 91 | 72 - 130 | 15 | 40 |
| Dichlorodifluoromethane | 0.0200 | 0.0165 | | mg/Kg | | 83 | 33 - 150 | 9 | 31 |
| Ethylbenzene | 0.0200 | 0.0130 | *- *1 | mg/Kg | | 65 | 80 - 135 | 31 | 20 |
| Hexachlorobutadiene | 0.0200 | 0.0132 | | mg/Kg | | 66 | 65 - 145 | 26 | 36 |
| Isopropylbenzene | 0.0200 | 0.0127 | *- *1 | mg/Kg | | 64 | 80 - 131 | 25 | 20 |
| Methyl tert-butyl ether | 0.0200 | 0.0175 | | mg/Kg | | 88 | 71 - 126 | 7 | 20 |
| Methylene Chloride | 0.0200 | ND | *- *1 | mg/Kg | | 46 | 56 - 140 | 25 | 20 |
| m-Xylene & p-Xylene | 0.0200 | 0.0131 | *- *1 | mg/Kg | | 66 | 80 - 132 | 29 | 20 |
| Naphthalene | 0.0200 | 0.0171 | | mg/Kg | | 86 | 56 - 145 | 14 | 25 |
| n-Butylbenzene | 0.0200 | 0.0135 | *- | mg/Kg | | 68 | 69 - 143 | 30 | 31 |

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCSD 580-389935/3-A**
**Matrix: Solid**
**Analysis Batch: 390212**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 389935**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N-Propylbenzene | | | 0.0200 | 0.0138 | *- *1 | mg/Kg | | 69 | 78 - 133 | 34 | 24 |
| o-Xylene | | | 0.0200 | 0.0134 | *- *1 | mg/Kg | | 67 | 80 - 132 | 25 | 20 |
| sec-Butylbenzene | | | 0.0200 | 0.0134 | *- *1 | mg/Kg | | 67 | 71 - 143 | 31 | 29 |
| Styrene | | | 0.0200 | 0.0142 | *- *1 | mg/Kg | | 71 | 79 - 129 | 24 | 20 |
| t-Butylbenzene | | | 0.0200 | 0.0142 | *- *1 | mg/Kg | | 71 | 72 - 144 | 28 | 27 |
| Tetrachloroethene | | | 0.0200 | 0.0124 | *- *1 | mg/Kg | | 62 | 75 - 141 | 41 | 20 |
| Toluene | | | 0.0200 | 0.0123 | *- *1 | mg/Kg | | 61 | 75 - 125 | 34 | 20 |
| trans-1,2-Dichloroethene | | | 0.0200 | 0.0150 | *- *1 | mg/Kg | | 75 | 77 - 134 | 23 | 20 |
| trans-1,3-Dichloropropene | | | 0.0200 | 0.0146 | *- | mg/Kg | | 73 | 80 - 121 | 18 | 20 |
| Trichloroethene | | | 0.0200 | 0.0145 | *- *1 | mg/Kg | | 72 | 80 - 134 | 29 | 20 |
| Trichlorofluoromethane | | | 0.0200 | 0.0187 | | mg/Kg | | 93 | 71 - 150 | 9 | 30 |
| Vinyl chloride | | | 0.0200 | 0.0166 | | mg/Kg | | 83 | 62 - 144 | 5 | 20 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *110* | | *80 - 121* |
| *4-Bromofluorobenzene (Surr)* | *98* | | *80 - 120* |
| *Dibromofluoromethane (Surr)* | *111* | | *80 - 120* |
| *Toluene-d8 (Surr)* | *95* | | *80 - 120* |

**Lab Sample ID: MB 580-390896/1-A**
**Matrix: Solid**
**Analysis Batch: 390936**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 390896**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | | 0.0030 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.0040 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,1-Dichloroethane | ND | | 0.0010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,1-Dichloroethene | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,1-Dichloropropene | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 0.0030 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,2,3-Trichloropropane | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 0.010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,2-Dibromoethane | ND | | 0.0010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,2-Dichloroethane | ND | | 0.0010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,2-Dichloropropane | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,3-Dichloropropane | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 2,2-Dichloropropane | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 2-Chlorotoluene | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 4-Chlorotoluene | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| 4-Isopropyltoluene | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: MB 580-390896/1-A**
**Matrix: Solid**
**Analysis Batch: 390936**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 390896**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Bromobenzene | ND | | 0.010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Bromochloromethane | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Bromodichloromethane | ND | | 0.0010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Bromoform | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Bromomethane | ND | | 0.0010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Carbon tetrachloride | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Chlorobenzene | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Chloroethane | ND | | 0.010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Chloroform | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Chloromethane | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| cis-1,2-Dichloroethene | ND | | 0.0030 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.0010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Dibromochloromethane | ND | | 0.0015 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Dibromomethane | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Dichlorodifluoromethane | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Ethylbenzene | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Hexachlorobutadiene | ND | | 0.0030 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Isopropylbenzene | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Methyl tert-butyl ether | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Methylene Chloride | ND | | 0.040 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| m-Xylene & p-Xylene | ND | | 0.010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Naphthalene | ND | | 0.010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| n-Butylbenzene | ND | | 0.0030 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| N-Propylbenzene | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| o-Xylene | ND | | 0.0050 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| sec-Butylbenzene | ND | | 0.0030 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Styrene | ND | | 0.0030 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| t-Butylbenzene | ND | | 0.0030 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Tetrachloroethene | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Toluene | ND | | 0.010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.010 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Trichloroethene | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Trichlorofluoromethane | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |
| Vinyl chloride | ND | | 0.0020 | | mg/Kg | | 05/17/22 08:00 | 05/17/22 12:28 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *163* | *S1+* | *80 - 121* | *05/17/22 08:00* | *05/17/22 12:28* | *1* |
| *4-Bromofluorobenzene (Surr)* | *88* | | *80 - 120* | *05/17/22 08:00* | *05/17/22 12:28* | *1* |
| *Dibromofluoromethane (Surr)* | *102* | | *80 - 120* | *05/17/22 08:00* | *05/17/22 12:28* | *1* |
| *Toluene-d8 (Surr)* | *97* | | *80 - 120* | *05/17/22 08:00* | *05/17/22 12:28* | *1* |

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCS 580-390896/2-A**
**Matrix: Solid**
**Analysis Batch: 390936**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 390896**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.0200 | 0.0229 | | mg/Kg | | 115 | 79 - 128 |
| 1,1,1-Trichloroethane | 0.0200 | 0.0222 | | mg/Kg | | 111 | 78 - 135 |
| 1,1,2,2-Tetrachloroethane | 0.0200 | 0.0332 | *+ | mg/Kg | | 166 | 77 - 122 |
| 1,1,2-Trichloroethane | 0.0200 | 0.0252 | *+ | mg/Kg | | 126 | 80 - 123 |
| 1,1-Dichloroethane | 0.0200 | 0.0318 | *+ | mg/Kg | | 159 | 78 - 126 |
| 1,1-Dichloroethene | 0.0200 | 0.0172 | | mg/Kg | | 86 | 73 - 134 |
| 1,1-Dichloropropene | 0.0200 | 0.0199 | | mg/Kg | | 99 | 76 - 140 |
| 1,2,3-Trichlorobenzene | 0.0200 | 0.0274 | | mg/Kg | | 137 | 58 - 146 |
| 1,2,3-Trichloropropane | 0.0200 | 0.0374 | *+ | mg/Kg | | 187 | 77 - 127 |
| 1,2,4-Trichlorobenzene | 0.0200 | 0.0261 | | mg/Kg | | 130 | 74 - 131 |
| 1,2,4-Trimethylbenzene | 0.0200 | 0.0332 | *+ | mg/Kg | | 166 | 73 - 138 |
| 1,2-Dibromo-3-Chloropropane | 0.0200 | 0.0287 | *+ | mg/Kg | | 144 | 64 - 129 |
| 1,2-Dibromoethane | 0.0200 | 0.0283 | *+ | mg/Kg | | 142 | 77 - 123 |
| 1,2-Dichlorobenzene | 0.0200 | 0.0280 | *+ | mg/Kg | | 140 | 78 - 126 |
| 1,2-Dichloroethane | 0.0200 | 0.0403 | *+ | mg/Kg | | 201 | 76 - 124 |
| 1,2-Dichloropropane | 0.0200 | 0.0345 | *+ | mg/Kg | | 172 | 73 - 130 |
| 1,3,5-Trimethylbenzene | 0.0200 | 0.0319 | *+ | mg/Kg | | 159 | 72 - 134 |
| 1,3-Dichlorobenzene | 0.0200 | 0.0265 | | mg/Kg | | 132 | 78 - 132 |
| 1,3-Dichloropropane | 0.0200 | 0.0295 | *+ | mg/Kg | | 147 | 80 - 120 |
| 1,4-Dichlorobenzene | 0.0200 | 0.0272 | *+ | mg/Kg | | 136 | 77 - 123 |
| 2,2-Dichloropropane | 0.0200 | 0.0271 | *+ | mg/Kg | | 136 | 75 - 134 |
| 2-Chlorotoluene | 0.0200 | 0.0263 | | mg/Kg | | 132 | 77 - 134 |
| 4-Chlorotoluene | 0.0200 | 0.0306 | *+ | mg/Kg | | 153 | 71 - 137 |
| 4-Isopropyltoluene | 0.0200 | 0.0289 | *+ | mg/Kg | | 144 | 71 - 142 |
| Benzene | 0.0200 | 0.0214 | | mg/Kg | | 107 | 79 - 135 |
| Bromobenzene | 0.0200 | 0.0269 | *+ | mg/Kg | | 135 | 78 - 126 |
| Bromochloromethane | 0.0200 | 0.0188 | | mg/Kg | | 94 | 76 - 131 |
| Bromodichloromethane | 0.0200 | 0.0286 | *+ | mg/Kg | | 143 | 78 - 125 |
| Bromoform | 0.0200 | 0.0256 | | mg/Kg | | 128 | 71 - 130 |
| Bromomethane | 0.0200 | 0.0104 | *- | mg/Kg | | 52 | 55 - 150 |
| Carbon tetrachloride | 0.0200 | 0.0238 | | mg/Kg | | 119 | 76 - 140 |
| Chlorobenzene | 0.0200 | 0.0241 | | mg/Kg | | 120 | 80 - 125 |
| Chloroethane | 0.0200 | 0.0245 | | mg/Kg | | 123 | 26 - 150 |
| Chloroform | 0.0200 | 0.0270 | *+ | mg/Kg | | 135 | 74 - 133 |
| Chloromethane | 0.0200 | 0.0242 | | mg/Kg | | 121 | 52 - 142 |
| cis-1,2-Dichloroethene | 0.0200 | 0.0221 | | mg/Kg | | 111 | 80 - 125 |
| cis-1,3-Dichloropropene | 0.0200 | 0.0259 | *+ | mg/Kg | | 129 | 80 - 122 |
| Dibromochloromethane | 0.0200 | 0.0249 | | mg/Kg | | 124 | 75 - 125 |
| Dibromomethane | 0.0200 | 0.0198 | | mg/Kg | | 99 | 72 - 130 |
| Dichlorodifluoromethane | 0.0200 | 0.0157 | | mg/Kg | | 78 | 33 - 150 |
| Ethylbenzene | 0.0200 | 0.0238 | | mg/Kg | | 119 | 80 - 135 |
| Hexachlorobutadiene | 0.0200 | 0.0219 | | mg/Kg | | 109 | 65 - 145 |
| Isopropylbenzene | 0.0200 | 0.0230 | | mg/Kg | | 115 | 80 - 131 |
| Methyl tert-butyl ether | 0.0200 | 0.0292 | *+ | mg/Kg | | 146 | 71 - 126 |
| Methylene Chloride | 0.0200 | 0.0139 | J | mg/Kg | | 69 | 56 - 140 |
| m-Xylene & p-Xylene | 0.0200 | 0.0257 | | mg/Kg | | 129 | 80 - 132 |
| Naphthalene | 0.0200 | 0.0329 | *+ | mg/Kg | | 165 | 56 - 145 |
| n-Butylbenzene | 0.0200 | 0.0274 | | mg/Kg | | 137 | 69 - 143 |

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCS 580-390896/2-A**
**Matrix: Solid**
**Analysis Batch: 390936**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 390896**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N-Propylbenzene | | | 0.0200 | 0.0312 | *+ | mg/Kg | | 156 | 78 - 133 | | |
| o-Xylene | | | 0.0200 | 0.0254 | | mg/Kg | | 127 | 80 - 132 | | |
| sec-Butylbenzene | | | 0.0200 | 0.0287 | | mg/Kg | | 143 | 71 - 143 | | |
| Styrene | | | 0.0200 | 0.0266 | *+ | mg/Kg | | 133 | 79 - 129 | | |
| t-Butylbenzene | | | 0.0200 | 0.0277 | | mg/Kg | | 139 | 72 - 144 | | |
| Tetrachloroethene | | | 0.0200 | 0.0206 | | mg/Kg | | 103 | 75 - 141 | | |
| Toluene | | | 0.0200 | 0.0196 | | mg/Kg | | 98 | 75 - 125 | | |
| trans-1,2-Dichloroethene | | | 0.0200 | 0.0178 | | mg/Kg | | 89 | 77 - 134 | | |
| trans-1,3-Dichloropropene | | | 0.0200 | 0.0283 | *+ | mg/Kg | | 142 | 80 - 121 | | |
| Trichloroethene | | | 0.0200 | 0.0194 | | mg/Kg | | 97 | 80 - 134 | | |
| Trichlorofluoromethane | | | 0.0200 | 0.0192 | | mg/Kg | | 96 | 71 - 150 | | |
| Vinyl chloride | | | 0.0200 | 0.0155 | | mg/Kg | | 77 | 62 - 144 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *151* | *S1+* | *80 - 121* |
| *4-Bromofluorobenzene (Surr)* | *82* | | *80 - 120* |
| *Dibromofluoromethane (Surr)* | *100* | | *80 - 120* |
| *Toluene-d8 (Surr)* | *91* | | *80 - 120* |

**Lab Sample ID: LCSD 580-390896/3-A**
**Matrix: Solid**
**Analysis Batch: 390936**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 390896**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | | | 0.0200 | 0.0246 | | mg/Kg | | 123 | 79 - 128 | 7 | 20 |
| 1,1,1-Trichloroethane | | | 0.0200 | 0.0200 | | mg/Kg | | 100 | 78 - 135 | 11 | 20 |
| 1,1,2,2-Tetrachloroethane | | | 0.0200 | 0.0348 | *+ | mg/Kg | | 174 | 77 - 122 | 4 | 20 |
| 1,1,2-Trichloroethane | | | 0.0200 | 0.0283 | *+ | mg/Kg | | 142 | 80 - 123 | 12 | 20 |
| 1,1-Dichloroethane | | | 0.0200 | 0.0302 | *+ | mg/Kg | | 151 | 78 - 126 | 5 | 20 |
| 1,1-Dichloroethene | | | 0.0200 | 0.0160 | | mg/Kg | | 80 | 73 - 134 | 7 | 25 |
| 1,1-Dichloropropene | | | 0.0200 | 0.0196 | | mg/Kg | | 98 | 76 - 140 | 1 | 20 |
| 1,2,3-Trichlorobenzene | | | 0.0200 | 0.0289 | | mg/Kg | | 145 | 58 - 146 | 6 | 28 |
| 1,2,3-Trichloropropane | | | 0.0200 | 0.0367 | *+ | mg/Kg | | 184 | 77 - 127 | 2 | 20 |
| 1,2,4-Trichlorobenzene | | | 0.0200 | 0.0269 | *+ | mg/Kg | | 135 | 74 - 131 | 3 | 26 |
| 1,2,4-Trimethylbenzene | | | 0.0200 | 0.0340 | *+ | mg/Kg | | 170 | 73 - 138 | 2 | 22 |
| 1,2-Dibromo-3-Chloropropane | | | 0.0200 | 0.0294 | *+ | mg/Kg | | 147 | 64 - 129 | 2 | 40 |
| 1,2-Dibromoethane | | | 0.0200 | 0.0304 | *+ | mg/Kg | | 152 | 77 - 123 | 7 | 20 |
| 1,2-Dichlorobenzene | | | 0.0200 | 0.0273 | *+ | mg/Kg | | 137 | 78 - 126 | 3 | 20 |
| 1,2-Dichloroethane | | | 0.0200 | 0.0391 | *+ | mg/Kg | | 195 | 76 - 124 | 3 | 20 |
| 1,2-Dichloropropane | | | 0.0200 | 0.0338 | *+ | mg/Kg | | 169 | 73 - 130 | 2 | 20 |
| 1,3,5-Trimethylbenzene | | | 0.0200 | 0.0326 | *+ | mg/Kg | | 163 | 72 - 134 | 2 | 24 |
| 1,3-Dichlorobenzene | | | 0.0200 | 0.0273 | *+ | mg/Kg | | 137 | 78 - 132 | 3 | 20 |
| 1,3-Dichloropropane | | | 0.0200 | 0.0320 | *+ | mg/Kg | | 160 | 80 - 120 | 8 | 20 |
| 1,4-Dichlorobenzene | | | 0.0200 | 0.0270 | *+ | mg/Kg | | 135 | 77 - 123 | 1 | 20 |
| 2,2-Dichloropropane | | | 0.0200 | 0.0236 | | mg/Kg | | 118 | 75 - 134 | 14 | 20 |
| 2-Chlorotoluene | | | 0.0200 | 0.0272 | *+ | mg/Kg | | 136 | 77 - 134 | 3 | 21 |
| 4-Chlorotoluene | | | 0.0200 | 0.0316 | *+ | mg/Kg | | 158 | 71 - 137 | 3 | 21 |
| 4-Isopropyltoluene | | | 0.0200 | 0.0296 | *+ | mg/Kg | | 148 | 71 - 142 | 2 | 29 |

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCSD 580-390896/3-A**
**Matrix: Solid**
**Analysis Batch: 390936**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 390896**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0200 | 0.0206 | | mg/Kg | | 103 | 79 - 135 | 4 | 20 |
| Bromobenzene | 0.0200 | 0.0274 | *+ | mg/Kg | | 137 | 78 - 126 | 2 | 20 |
| Bromochloromethane | 0.0200 | 0.0179 | | mg/Kg | | 89 | 76 - 131 | 5 | 20 |
| Bromodichloromethane | 0.0200 | 0.0282 | *+ | mg/Kg | | 141 | 78 - 125 | 1 | 20 |
| Bromoform | 0.0200 | 0.0257 | | mg/Kg | | 129 | 71 - 130 | 1 | 20 |
| Bromomethane | 0.0200 | 0.00923 | *- | mg/Kg | | 46 | 55 - 150 | 12 | 26 |
| Carbon tetrachloride | 0.0200 | 0.0208 | | mg/Kg | | 104 | 76 - 140 | 13 | 20 |
| Chlorobenzene | 0.0200 | 0.0258 | *+ | mg/Kg | | 129 | 80 - 125 | 7 | 20 |
| Chloroethane | 0.0200 | 0.0245 | | mg/Kg | | 122 | 26 - 150 | 0 | 40 |
| Chloroform | 0.0200 | 0.0276 | *+ | mg/Kg | | 138 | 74 - 133 | 2 | 20 |
| Chloromethane | 0.0200 | 0.0229 | | mg/Kg | | 115 | 52 - 142 | 5 | 40 |
| cis-1,2-Dichloroethene | 0.0200 | 0.0210 | | mg/Kg | | 105 | 80 - 125 | 5 | 20 |
| cis-1,3-Dichloropropene | 0.0200 | 0.0289 | *+ | mg/Kg | | 144 | 80 - 122 | 11 | 20 |
| Dibromochloromethane | 0.0200 | 0.0266 | *+ | mg/Kg | | 133 | 75 - 125 | 7 | 20 |
| Dibromomethane | 0.0200 | 0.0194 | | mg/Kg | | 97 | 72 - 130 | 2 | 40 |
| Dichlorodifluoromethane | 0.0200 | 0.0153 | | mg/Kg | | 77 | 33 - 150 | 2 | 31 |
| Ethylbenzene | 0.0200 | 0.0258 | | mg/Kg | | 129 | 80 - 135 | 8 | 20 |
| Hexachlorobutadiene | 0.0200 | 0.0225 | | mg/Kg | | 112 | 65 - 145 | 3 | 36 |
| Isopropylbenzene | 0.0200 | 0.0243 | | mg/Kg | | 122 | 80 - 131 | 6 | 20 |
| Methyl tert-butyl ether | 0.0200 | 0.0266 | *+ | mg/Kg | | 133 | 71 - 126 | 9 | 20 |
| Methylene Chloride | 0.0200 | 0.0119 | J | mg/Kg | | 60 | 56 - 140 | 15 | 20 |
| m-Xylene & p-Xylene | 0.0200 | 0.0276 | *+ | mg/Kg | | 138 | 80 - 132 | 7 | 20 |
| Naphthalene | 0.0200 | 0.0334 | *+ | mg/Kg | | 167 | 56 - 145 | 2 | 25 |
| n-Butylbenzene | 0.0200 | 0.0276 | | mg/Kg | | 138 | 69 - 143 | 1 | 31 |
| N-Propylbenzene | 0.0200 | 0.0327 | *+ | mg/Kg | | 164 | 78 - 133 | 5 | 24 |
| o-Xylene | 0.0200 | 0.0265 | *+ | mg/Kg | | 133 | 80 - 132 | 4 | 20 |
| sec-Butylbenzene | 0.0200 | 0.0299 | *+ | mg/Kg | | 149 | 71 - 143 | 4 | 29 |
| Styrene | 0.0200 | 0.0279 | *+ | mg/Kg | | 139 | 79 - 129 | 5 | 20 |
| t-Butylbenzene | 0.0200 | 0.0285 | | mg/Kg | | 143 | 72 - 144 | 3 | 27 |
| Tetrachloroethene | 0.0200 | 0.0232 | | mg/Kg | | 116 | 75 - 141 | 12 | 20 |
| Toluene | 0.0200 | 0.0218 | | mg/Kg | | 109 | 75 - 125 | 11 | 20 |
| trans-1,2-Dichloroethene | 0.0200 | 0.0179 | | mg/Kg | | 89 | 77 - 134 | 0 | 20 |
| trans-1,3-Dichloropropene | 0.0200 | 0.0316 | *+ | mg/Kg | | 158 | 80 - 121 | 11 | 20 |
| Trichloroethene | 0.0200 | 0.0196 | | mg/Kg | | 98 | 80 - 134 | 1 | 20 |
| Trichlorofluoromethane | 0.0200 | 0.0200 | | mg/Kg | | 100 | 71 - 150 | 4 | 30 |
| Vinyl chloride | 0.0200 | 0.0136 | | mg/Kg | | 68 | 62 - 144 | 13 | 20 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *155* | *S1+* | *80 - 121* |
| *4-Bromofluorobenzene (Surr)* | *79* | *S1-* | *80 - 120* |
| *Dibromofluoromethane (Surr)* | *98* | | *80 - 120* |
| *Toluene-d8 (Surr)* | *95* | | *80 - 120* |

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

**Lab Sample ID: MB 580-389817/1-A**
**Matrix: Solid**
**Analysis Batch: 389850**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 389817**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ND | | 4.0 | | mg/Kg | | 05/07/22 12:28 | 05/07/22 13:29 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *96* | | *66 - 125* | *05/07/22 12:28* | *05/07/22 13:29* | *1* |

**Lab Sample ID: LCS 580-389817/2-A**
**Matrix: Solid**
**Analysis Batch: 389850**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 389817**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | | | 40.0 | 44.6 | | mg/Kg | | 112 | 80 - 120 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *97* | | *66 - 125* |

**Lab Sample ID: LCSD 580-389817/3-A**
**Matrix: Solid**
**Analysis Batch: 389850**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 389817**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline | | | 40.0 | 45.3 | | mg/Kg | | 113 | 80 - 120 | 2 | 10 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *97* | | *66 - 125* |

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

**Lab Sample ID: MB 580-390291/1-A**
**Matrix: Solid**
**Analysis Batch: 390538**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 390291**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| 2-Methylnaphthalene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Acenaphthene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Acenaphthylene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Anthracene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Benzo[a]anthracene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Benzo[a]pyrene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Benzo[b]fluoranthene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Benzo[k]fluoranthene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Chrysene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Fluoranthene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Fluorene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Naphthalene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: MB 580-390291/1-A**
**Matrix: Solid**
**Analysis Batch: 390538**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 390291**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Phenanthrene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |
| Pyrene | ND | | 0.0050 | | mg/Kg | | 05/11/22 16:47 | 05/13/22 12:57 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *119* | | *57 - 145* | *05/11/22 16:47* | *05/13/22 12:57* | *1* |

**Lab Sample ID: LCS 580-390291/2-A**
**Matrix: Solid**
**Analysis Batch: 390538**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 390291**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | | | 1.00 | 0.964 | | mg/Kg | | 96 | 64 - 120 | | |
| 2-Methylnaphthalene | | | 1.00 | 0.983 | | mg/Kg | | 98 | 64 - 120 | | |
| Acenaphthene | | | 1.00 | 0.993 | | mg/Kg | | 99 | 65 - 120 | | |
| Acenaphthylene | | | 1.00 | 1.03 | | mg/Kg | | 103 | 66 - 120 | | |
| Anthracene | | | 1.00 | 1.08 | | mg/Kg | | 108 | 53 - 132 | | |
| Benzo[a]anthracene | | | 1.00 | 1.01 | | mg/Kg | | 101 | 66 - 127 | | |
| Benzo[a]pyrene | | | 1.00 | 0.960 | | mg/Kg | | 96 | 66 - 124 | | |
| Benzo[b]fluoranthene | | | 1.00 | 0.937 | | mg/Kg | | 94 | 54 - 122 | | |
| Benzo[g,h,i]perylene | | | 1.00 | 0.971 | | mg/Kg | | 97 | 61 - 128 | | |
| Benzo[k]fluoranthene | | | 1.00 | 0.942 | | mg/Kg | | 94 | 51 - 131 | | |
| Chrysene | | | 1.00 | 0.896 | | mg/Kg | | 90 | 57 - 128 | | |
| Dibenz(a,h)anthracene | | | 1.00 | 1.03 | | mg/Kg | | 103 | 64 - 133 | | |
| Fluoranthene | | | 1.00 | 1.06 | | mg/Kg | | 106 | 64 - 130 | | |
| Fluorene | | | 1.00 | 1.07 | | mg/Kg | | 107 | 62 - 126 | | |
| Indeno[1,2,3-cd]pyrene | | | 1.00 | 0.869 | | mg/Kg | | 87 | 63 - 132 | | |
| Naphthalene | | | 1.00 | 0.915 | | mg/Kg | | 92 | 65 - 120 | | |
| Phenanthrene | | | 1.00 | 0.935 | | mg/Kg | | 94 | 63 - 120 | | |
| Pyrene | | | 1.00 | 1.04 | | mg/Kg | | 104 | 62 - 131 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *Terphenyl-d14* | *119* | | *57 - 145* |

**Lab Sample ID: LCSD 580-390291/3-A**
**Matrix: Solid**
**Analysis Batch: 390538**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 390291**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | | | 1.00 | 0.984 | | mg/Kg | | 98 | 64 - 120 | 2 | 20 |
| 2-Methylnaphthalene | | | 1.00 | 0.998 | | mg/Kg | | 100 | 64 - 120 | 1 | 20 |
| Acenaphthene | | | 1.00 | 1.00 | | mg/Kg | | 100 | 65 - 120 | 1 | 20 |
| Acenaphthylene | | | 1.00 | 1.04 | | mg/Kg | | 104 | 66 - 120 | 1 | 20 |
| Anthracene | | | 1.00 | 1.10 | | mg/Kg | | 110 | 53 - 132 | 2 | 40 |
| Benzo[a]anthracene | | | 1.00 | 1.02 | | mg/Kg | | 102 | 66 - 127 | 1 | 20 |
| Benzo[a]pyrene | | | 1.00 | 0.966 | | mg/Kg | | 97 | 66 - 124 | 1 | 40 |
| Benzo[b]fluoranthene | | | 1.00 | 0.951 | | mg/Kg | | 95 | 54 - 122 | 1 | 20 |
| Benzo[g,h,i]perylene | | | 1.00 | 0.983 | | mg/Kg | | 98 | 61 - 128 | 1 | 20 |
| Benzo[k]fluoranthene | | | 1.00 | 0.947 | | mg/Kg | | 95 | 51 - 131 | 0 | 20 |

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: LCSD 580-390291/3-A**
**Matrix: Solid**
**Analysis Batch: 390538**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 390291**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chrysene | | | 1.00 | 0.912 | | mg/Kg | | 91 | 57 - 128 | 2 | 20 |
| Dibenz(a,h)anthracene | | | 1.00 | 1.04 | | mg/Kg | | 104 | 64 - 133 | 1 | 20 |
| Fluoranthene | | | 1.00 | 1.08 | | mg/Kg | | 108 | 64 - 130 | 2 | 20 |
| Fluorene | | | 1.00 | 1.08 | | mg/Kg | | 108 | 62 - 126 | 1 | 20 |
| Indeno[1,2,3-cd]pyrene | | | 1.00 | 0.876 | | mg/Kg | | 88 | 63 - 132 | 1 | 20 |
| Naphthalene | | | 1.00 | 0.930 | | mg/Kg | | 93 | 65 - 120 | 2 | 20 |
| Phenanthrene | | | 1.00 | 0.961 | | mg/Kg | | 96 | 63 - 120 | 3 | 20 |
| Pyrene | | | 1.00 | 1.06 | | mg/Kg | | 106 | 62 - 131 | 2 | 20 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *Terphenyl-d14* | *118* | | *57 - 145* |

**Lab Sample ID: 580-113209-1 MS**
**Matrix: Solid**
**Analysis Batch: 390538**

**Client Sample ID: SS-1-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 390291**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | | 1.68 | 1.52 | | mg/Kg | ☼ | 90 | 64 - 120 |
| 2-Methylnaphthalene | ND | | 1.68 | 1.53 | | mg/Kg | ☼ | 91 | 64 - 120 |
| Acenaphthene | ND | | 1.68 | 1.58 | | mg/Kg | ☼ | 94 | 65 - 120 |
| Acenaphthylene | ND | | 1.68 | 1.61 | | mg/Kg | ☼ | 96 | 66 - 120 |
| Anthracene | ND | | 1.68 | 1.63 | | mg/Kg | ☼ | 97 | 53 - 132 |
| Benzo[a]anthracene | ND | | 1.68 | 1.55 | | mg/Kg | ☼ | 92 | 66 - 127 |
| Benzo[a]pyrene | ND | | 1.68 | 1.47 | | mg/Kg | ☼ | 87 | 66 - 124 |
| Benzo[b]fluoranthene | ND | | 1.68 | 1.48 | | mg/Kg | ☼ | 88 | 54 - 122 |
| Benzo[g,h,i]perylene | ND | | 1.68 | 1.49 | | mg/Kg | ☼ | 89 | 61 - 128 |
| Benzo[k]fluoranthene | ND | | 1.68 | 1.33 | | mg/Kg | ☼ | 79 | 51 - 131 |
| Chrysene | ND | | 1.68 | 1.41 | | mg/Kg | ☼ | 84 | 57 - 128 |
| Dibenz(a,h)anthracene | ND | | 1.68 | 1.59 | | mg/Kg | ☼ | 94 | 64 - 133 |
| Fluoranthene | ND | | 1.68 | 1.70 | | mg/Kg | ☼ | 101 | 64 - 130 |
| Fluorene | ND | | 1.68 | 1.70 | | mg/Kg | ☼ | 101 | 62 - 126 |
| Indeno[1,2,3-cd]pyrene | ND | | 1.68 | 1.64 | | mg/Kg | ☼ | 97 | 63 - 132 |
| Naphthalene | ND | | 1.68 | 1.44 | | mg/Kg | ☼ | 85 | 65 - 120 |
| Phenanthrene | ND | | 1.68 | 1.49 | | mg/Kg | ☼ | 88 | 63 - 120 |
| Pyrene | ND | | 1.68 | 1.65 | | mg/Kg | ☼ | 98 | 62 - 131 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *Terphenyl-d14* | *109* | | *57 - 145* |

**Lab Sample ID: 580-113209-1 MSD**
**Matrix: Solid**
**Analysis Batch: 390538**

**Client Sample ID: SS-1-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 390291**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | | 1.54 | 1.33 | | mg/Kg | ☼ | 86 | 64 - 120 | 13 | 20 |
| 2-Methylnaphthalene | ND | | 1.54 | 1.35 | | mg/Kg | ☼ | 87 | 64 - 120 | 13 | 20 |
| Acenaphthene | ND | | 1.54 | 1.36 | | mg/Kg | ☼ | 88 | 65 - 120 | 15 | 20 |
| Acenaphthylene | ND | | 1.54 | 1.39 | | mg/Kg | ☼ | 90 | 66 - 120 | 15 | 20 |

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: 580-113209-1 MSD**
**Matrix: Solid**
**Analysis Batch: 390538**

**Client Sample ID: SS-1-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 390291**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Anthracene | ND | | 1.54 | 1.41 | | mg/Kg | ☼ | 91 | 53 - 132 | 15 | 40 |
| Benzo[a]anthracene | ND | | 1.54 | 1.35 | | mg/Kg | ☼ | 88 | 66 - 127 | 14 | 20 |
| Benzo[a]pyrene | ND | | 1.54 | 1.28 | | mg/Kg | ☼ | 83 | 66 - 124 | 14 | 40 |
| Benzo[b]fluoranthene | ND | | 1.54 | 1.29 | | mg/Kg | ☼ | 84 | 54 - 122 | 13 | 20 |
| Benzo[g,h,i]perylene | ND | | 1.54 | 1.32 | | mg/Kg | ☼ | 85 | 61 - 128 | 12 | 20 |
| Benzo[k]fluoranthene | ND | | 1.54 | 1.15 | | mg/Kg | ☼ | 75 | 51 - 131 | 14 | 20 |
| Chrysene | ND | | 1.54 | 1.20 | | mg/Kg | ☼ | 78 | 57 - 128 | 16 | 20 |
| Dibenz(a,h)anthracene | ND | | 1.54 | 1.42 | | mg/Kg | ☼ | 92 | 64 - 133 | 11 | 20 |
| Fluoranthene | ND | | 1.54 | 1.49 | | mg/Kg | ☼ | 96 | 64 - 130 | 13 | 20 |
| Fluorene | ND | | 1.54 | 1.48 | | mg/Kg | ☼ | 96 | 62 - 126 | 14 | 20 |
| Indeno[1,2,3-cd]pyrene | ND | | 1.54 | 1.40 | | mg/Kg | ☼ | 91 | 63 - 132 | 16 | 20 |
| Naphthalene | ND | | 1.54 | 1.25 | | mg/Kg | ☼ | 81 | 65 - 120 | 14 | 20 |
| Phenanthrene | ND | | 1.54 | 1.29 | | mg/Kg | ☼ | 83 | 63 - 120 | 14 | 20 |
| Pyrene | ND | | 1.54 | 1.44 | | mg/Kg | ☼ | 93 | 62 - 131 | 13 | 20 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *Terphenyl-d14* | *105* | | *57 - 145* |

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

**Lab Sample ID: MB 580-390087/1-A**
**Matrix: Solid**
**Analysis Batch: 390425**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 390087**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 50 | | mg/Kg | | 05/10/22 13:16 | 05/12/22 12:56 | 1 |
| Motor Oil (>C24-C36) | ND | | 50 | | mg/Kg | | 05/10/22 13:16 | 05/12/22 12:56 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *108* | | *50 - 150* | *05/10/22 13:16* | *05/12/22 12:56* | *1* |

**Lab Sample ID: LCS 580-390087/2-A**
**Matrix: Solid**
**Analysis Batch: 390425**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 390087**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 500 | 481 | | mg/Kg | | 96 | 70 - 125 |
| Motor Oil (>C24-C36) | 500 | 546 | | mg/Kg | | 109 | 70 - 129 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *109* | | *50 - 150* |

**Lab Sample ID: LCSD 580-390087/3-A**
**Matrix: Solid**
**Analysis Batch: 390425**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 390087**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 500 | 451 | | mg/Kg | | 90 | 70 - 125 | 6 | 16 |

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

**Lab Sample ID: LCSD 580-390087/3-A**
**Matrix: Solid**
**Analysis Batch: 390425**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 390087**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Motor Oil (>C24-C36) | | | 500 | 466 | | mg/Kg | | 93 | 70 - 129 | 16 | 16 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *92* | | *50 - 150* |

**Lab Sample ID: 580-113209-5 DU**
**Matrix: Solid**
**Analysis Batch: 390425**

**Client Sample ID: SS-8-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 390087**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | | ND | | mg/Kg | ☼ | | | NC | 35 |
| Motor Oil (>C24-C36) | ND | | | ND | | mg/Kg | ☼ | | | NC | 35 |

| *Surrogate* | *DU %Recovery* | *DU Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *102* | | *50 - 150* |

**Lab Sample ID: 580-113209-6 DU**
**Matrix: Solid**
**Analysis Batch: 390425**

**Client Sample ID: SS-11-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 390087**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | | ND | | mg/Kg | ☼ | | | NC | 35 |
| Motor Oil (>C24-C36) | ND | | | ND | | mg/Kg | ☼ | | | NC | 35 |

| *Surrogate* | *DU %Recovery* | *DU Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *105* | | *50 - 150* |

## Method: 6020B - Metals (ICP/MS)

**Lab Sample ID: MB 580-389705/21-A**
**Matrix: Solid**
**Analysis Batch: 390004**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 389705**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 0.25 | | mg/Kg | | 05/06/22 10:51 | 05/09/22 15:37 | 5 |
| Barium | ND | | 0.50 | | mg/Kg | | 05/06/22 10:51 | 05/09/22 15:37 | 5 |
| Cadmium | ND | | 0.40 | | mg/Kg | | 05/06/22 10:51 | 05/09/22 15:37 | 5 |
| Chromium | ND | | 0.50 | | mg/Kg | | 05/06/22 10:51 | 05/09/22 15:37 | 5 |
| Copper | ND | | 0.50 | | mg/Kg | | 05/06/22 10:51 | 05/09/22 15:37 | 5 |
| Lead | ND | | 0.25 | | mg/Kg | | 05/06/22 10:51 | 05/09/22 15:37 | 5 |
| Nickel | ND | | 0.25 | | mg/Kg | | 05/06/22 10:51 | 05/09/22 15:37 | 5 |
| Selenium | ND | | 0.75 | | mg/Kg | | 05/06/22 10:51 | 05/09/22 15:37 | 5 |
| Silver | ND | | 0.10 | | mg/Kg | | 05/06/22 10:51 | 05/09/22 15:37 | 5 |
| Zinc | ND | | 2.8 | | mg/Kg | | 05/06/22 10:51 | 05/09/22 15:37 | 5 |

## Method: 6020B - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 580-389705/22-A**
**Matrix: Solid**
**Analysis Batch: 390004**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 389705**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Arsenic | 50.0 | 50.3 | | mg/Kg | | 101 | 80 - 120 |
| Barium | 50.0 | 50.0 | | mg/Kg | | 100 | 80 - 120 |
| Cadmium | 50.0 | 51.0 | | mg/Kg | | 102 | 80 - 120 |
| Chromium | 50.0 | 51.7 | | mg/Kg | | 103 | 80 - 120 |
| Copper | 50.0 | 53.2 | | mg/Kg | | 106 | 80 - 120 |
| Lead | 50.0 | 51.2 | | mg/Kg | | 102 | 80 - 120 |
| Nickel | 50.0 | 52.8 | | mg/Kg | | 106 | 80 - 120 |
| Selenium | 50.0 | 50.4 | | mg/Kg | | 101 | 80 - 120 |
| Silver | 50.0 | 50.6 | | mg/Kg | | 101 | 80 - 120 |
| Zinc | 50.0 | 54.1 | | mg/Kg | | 108 | 80 - 120 |

**Lab Sample ID: LCSD 580-389705/23-A**
**Matrix: Solid**
**Analysis Batch: 390004**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 389705**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 50.0 | 51.5 | | mg/Kg | | 103 | 80 - 120 | 2 | 20 |
| Barium | 50.0 | 50.9 | | mg/Kg | | 102 | 80 - 120 | 2 | 20 |
| Cadmium | 50.0 | 51.8 | | mg/Kg | | 104 | 80 - 120 | 2 | 20 |
| Chromium | 50.0 | 52.8 | | mg/Kg | | 106 | 80 - 120 | 2 | 20 |
| Copper | 50.0 | 54.5 | | mg/Kg | | 109 | 80 - 120 | 2 | 20 |
| Lead | 50.0 | 52.0 | | mg/Kg | | 104 | 80 - 120 | 2 | 20 |
| Nickel | 50.0 | 54.0 | | mg/Kg | | 108 | 80 - 120 | 2 | 20 |
| Selenium | 50.0 | 50.0 | | mg/Kg | | 100 | 80 - 120 | 1 | 20 |
| Silver | 50.0 | 52.0 | | mg/Kg | | 104 | 80 - 120 | 3 | 20 |
| Zinc | 50.0 | 58.2 | | mg/Kg | | 116 | 80 - 120 | 7 | 20 |

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 580-389923/22-A**
**Matrix: Solid**
**Analysis Batch: 390079**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 389923**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.030 | | mg/Kg | | 05/09/22 10:43 | 05/09/22 19:58 | 1 |

**Lab Sample ID: LCS 580-389923/23-A**
**Matrix: Solid**
**Analysis Batch: 390079**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 389923**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.167 | 0.180 | | mg/Kg | | 108 | 80 - 120 |

**Lab Sample ID: LCSD 580-389923/24-A**
**Matrix: Solid**
**Analysis Batch: 390079**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 389923**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.167 | 0.178 | | mg/Kg | | 106 | 80 - 120 | 1 | 20 |

## Method: 7471A - Mercury (CVAA) (Continued)

**Lab Sample ID: 580-113209-1 MS**
**Matrix: Solid**
**Analysis Batch: 390079**

**Client Sample ID: SS-1-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 389923**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.051 | | 0.276 | 0.383 | | mg/Kg | ☼ | 120 | 80 - 120 |

**Lab Sample ID: 580-113209-1 MSD**
**Matrix: Solid**
**Analysis Batch: 390079**

**Client Sample ID: SS-1-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 389923**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.051 | | 0.271 | 0.361 | | mg/Kg | ☼ | 114 | 80 - 120 | 6 | 20 |

**Lab Sample ID: 580-113209-1 DU**
**Matrix: Solid**
**Analysis Batch: 390079**

**Client Sample ID: SS-1-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 389923**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Mercury | 0.051 | | 0.0513 | | mg/Kg | ☼ | 0.4 | 20 |

## Method: 2540G - SM 2540G

**Lab Sample ID: 580-113209-1 DU**
**Matrix: Solid**
**Analysis Batch: 390091**

**Client Sample ID: SS-1-S1-0.5**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Percent Solids | 57.2 | | 60.3 | | % | | 5 | 20 |
| Percent Moisture | 42.8 | | 39.7 | | % | | 8 | 20 |

## Method: 7196A - Chromium, Hexavalent

**Lab Sample ID: MB 410-252280/1-A**
**Matrix: Solid**
**Analysis Batch: 253293**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 252280**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | ND | | 0.42 | | mg/Kg | | 05/05/22 21:18 | 05/10/22 00:30 | 1 |

**Lab Sample ID: LCS 410-252280/2-A**
**Matrix: Solid**
**Analysis Batch: 253293**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 252280**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Cr (VI) | 5.00 | 4.98 | | mg/Kg | | 100 | 80 - 120 |

**Lab Sample ID: LCSI 410-252280/3-A**
**Matrix: Solid**
**Analysis Batch: 253293**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 252280**

| Analyte | Spike Added | LCSI Result | LCSI Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Cr (VI) | 720 | 727 | | mg/Kg | | 101 | 80 - 120 |

## Method: 7196A - Chromium, Hexavalent (Continued)

**Lab Sample ID: 580-113209-3 MSI**
**Matrix: Solid**
**Analysis Batch: 253293**

**Client Sample ID: SS-7-R-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 252280**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSI Result | MSI Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | ND | | 1080 | 1070 | | mg/Kg | ☼ | 100 | 75 - 125 |

**Lab Sample ID: 580-113209-3 MSS**
**Matrix: Solid**
**Analysis Batch: 253293**

**Client Sample ID: SS-7-R-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 252280**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSS Result | MSS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | ND | | 49.7 | 40.2 | | mg/Kg | ☼ | 81 | 75 - 125 |

**Lab Sample ID: 580-113209-3 DU**
**Matrix: Solid**
**Analysis Batch: 253293**

**Client Sample ID: SS-7-R-S1-0.5**
**Prep Type: Total/NA**
**Prep Batch: 252280**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Cr (VI) | ND | | ND | | mg/Kg | ☼ | NC | 20 |

## Method: 9060A - Organic Carbon, Total (TOC)

**Lab Sample ID: MB 580-390261/36**
**Matrix: Solid**
**Analysis Batch: 390261**

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

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Average Dup | ND | | 2000 | | mg/Kg | | | 05/11/22 13:42 | 1 |

**Lab Sample ID: MB 580-390261/5**
**Matrix: Solid**
**Analysis Batch: 390261**

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

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Average Dup | ND | | 2000 | | mg/Kg | | | 05/10/22 17:35 | 1 |

**Lab Sample ID: LCS 580-390261/37**
**Matrix: Solid**
**Analysis Batch: 390261**

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

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Average Dup | 120000 | 115000 | | mg/Kg | | 95 | 80 - 120 |

**Lab Sample ID: LCS 580-390261/6**
**Matrix: Solid**
**Analysis Batch: 390261**

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

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Average Dup | 120000 | 114000 | | mg/Kg | | 95 | 80 - 120 |

## Method: 9060A - Organic Carbon, Total (TOC) (Continued)

**Lab Sample ID: LCSD 580-390261/38**
**Matrix: Solid**
**Analysis Batch: 390261**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Average Dup | | | 120000 | 114000 | | mg/Kg | | 95 | 80 - 120 | 0 | 20 |

**Lab Sample ID: LCSD 580-390261/7**
**Matrix: Solid**
**Analysis Batch: 390261**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Average Dup | | | 120000 | 114000 | | mg/Kg | | 95 | 80 - 120 | 0 | 20 |

**Lab Sample ID: 580-113209-3 MS**
**Matrix: Solid**
**Analysis Batch: 390261**

**Client Sample ID: SS-7-R-S1-0.5**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Average Dup | 10000 | | 120000 | 129000 | | mg/Kg | | 99 | 75 - 125 | | |

**Lab Sample ID: 580-113209-3 MSD**
**Matrix: Solid**
**Analysis Batch: 390261**

**Client Sample ID: SS-7-R-S1-0.5**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Average Dup | 10000 | | 120000 | 137000 | | mg/Kg | | 106 | 75 - 125 | 7 | 20 |

**Lab Sample ID: 580-113209-3 DU**
**Matrix: Solid**
**Analysis Batch: 390261**

**Client Sample ID: SS-7-R-S1-0.5**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Average Dup | 10000 | | | 14500 | F3 | mg/Kg | | | | 37 | 20 |

# Lab Chronicle

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

## Client Sample ID: SS-1-S1-0.5
**Date Collected: 04/27/22 16:00**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-1
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 2540G | | 1 | 390091 | 05/10/22 13:38 | JSM | FGS SEA |
| Total/NA | Analysis | 7196A | | 1 | 250116 | 05/12/22 02:35 | BI8H | ELLE |
| Total/NA | Analysis | 9060A | | 1 | 390261 | 05/10/22 19:12 | N1R | FGS SEA |

## Client Sample ID: SS-1-S1-0.5
**Date Collected: 04/27/22 16:00**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-1
**Matrix: Solid**
**Percent Solids: 57.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 389935 | 04/28/22 11:00 | VLF | FGS SEA |
| Total/NA | Analysis | 8260D | | 1 | 390212 | 05/09/22 14:44 | BNM | FGS SEA |
| Total/NA | Prep | 5035 | RA | | 390896 | 04/28/22 11:00 | VLF | FGS SEA |
| Total/NA | Analysis | 8260D | RA | 1 | 390936 | 05/17/22 12:51 | BNM | FGS SEA |
| Total/NA | Prep | 5035 | | | 389817 | 05/07/22 12:31 | RJL | FGS SEA |
| Total/NA | Analysis | NWTPH-Gx | | 1 | 389850 | 05/07/22 15:00 | JCM | FGS SEA |
| Total/NA | Prep | 3546 | | | 390291 | 05/11/22 16:47 | DH | FGS SEA |
| Total/NA | Analysis | 8270E SIM | | 1 | 390538 | 05/13/22 14:11 | TL1 | FGS SEA |
| Total/NA | Prep | 3546 | | | 390087 | 05/10/22 13:16 | TOA | FGS SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 390425 | 05/12/22 15:58 | Y1F | FGS SEA |
| Total/NA | Prep | 3050B | | | 389705 | 05/06/22 10:51 | ABP | FGS SEA |
| Total/NA | Analysis | 6020B | | 10 | 390004 | 05/09/22 17:29 | FCW | FGS SEA |
| Total/NA | Prep | 7471A | | | 389923 | 05/09/22 10:43 | ABP | FGS SEA |
| Total/NA | Analysis | 7471A | | 1 | 390079 | 05/09/22 20:10 | ABP | FGS SEA |
| Total/NA | Prep | 3060A | | | 252280 | 05/05/22 21:18 | UDS7 | ELLE |
| Total/NA | Analysis | 7196A | | 5 | 253293 | 05/10/22 00:30 | UDS7 | ELLE |

## Client Sample ID: SS-7-R-S1-0.5
**Date Collected: 04/27/22 17:00**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-3
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 2540G | | 1 | 390091 | 05/10/22 13:38 | JSM | FGS SEA |
| Total/NA | Analysis | 7196A | | 1 | 250116 | 05/12/22 02:35 | BI8H | ELLE |
| Total/NA | Analysis | 9060A | | 1 | 390261 | 05/11/22 13:49 | N1R | FGS SEA |

## Client Sample ID: SS-7-R-S1-0.5
**Date Collected: 04/27/22 17:00**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-3
**Matrix: Solid**
**Percent Solids: 81.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 389935 | 04/28/22 11:00 | VLF | FGS SEA |
| Total/NA | Analysis | 8260D | | 1 | 390212 | 05/09/22 15:29 | BNM | FGS SEA |
| Total/NA | Prep | 5035 | RA | | 390896 | 04/28/22 11:00 | VLF | FGS SEA |
| Total/NA | Analysis | 8260D | RA | 1 | 390936 | 05/17/22 13:13 | BNM | FGS SEA |

# Lab Chronicle

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

## Client Sample ID: SS-7-R-S1-0.5

**Lab Sample ID: 580-113209-3**

**Date Collected: 04/27/22 17:00**
**Matrix: Solid**
**Date Received: 04/28/22 10:54**
**Percent Solids: 81.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 389817 | 05/07/22 12:31 | RJL | FGS SEA |
| Total/NA | Analysis | NWTPH-Gx | | 1 | 389850 | 05/07/22 15:23 | JCM | FGS SEA |
| Total/NA | Prep | 3546 | | | 390291 | 05/11/22 16:47 | DH | FGS SEA |
| Total/NA | Analysis | 8270E SIM | | 1 | 390538 | 05/13/22 15:25 | TL1 | FGS SEA |
| Total/NA | Prep | 3546 | | | 390087 | 05/10/22 13:16 | TOA | FGS SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 390425 | 05/12/22 16:19 | Y1F | FGS SEA |
| Total/NA | Prep | 3050B | | | 389705 | 05/06/22 10:51 | ABP | FGS SEA |
| Total/NA | Analysis | 6020B | | 10 | 390004 | 05/09/22 17:33 | FCW | FGS SEA |
| Total/NA | Prep | 7471A | | | 389923 | 05/09/22 10:43 | ABP | FGS SEA |
| Total/NA | Analysis | 7471A | | 1 | 390079 | 05/09/22 20:20 | ABP | FGS SEA |
| Total/NA | Prep | 3060A | | | 252280 | 05/05/22 21:18 | UDS7 | ELLE |
| Total/NA | Analysis | 7196A | | 1 | 253293 | 05/10/22 00:30 | UDS7 | ELLE |

## Client Sample ID: SS-4-S1-0.5

**Lab Sample ID: 580-113209-4**

**Date Collected: 04/27/22 12:15**
**Matrix: Solid**
**Date Received: 04/28/22 10:54**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 2540G | | 1 | 390091 | 05/10/22 13:38 | JSM | FGS SEA |
| Total/NA | Analysis | 7196A | | 1 | 250116 | 05/12/22 02:35 | BI8H | ELLE |
| Total/NA | Analysis | 9060A | | 1 | 390261 | 05/11/22 14:03 | N1R | FGS SEA |

## Client Sample ID: SS-4-S1-0.5

**Lab Sample ID: 580-113209-4**

**Date Collected: 04/27/22 12:15**
**Matrix: Solid**
**Date Received: 04/28/22 10:54**
**Percent Solids: 79.3**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 389935 | 04/28/22 11:00 | VLF | FGS SEA |
| Total/NA | Analysis | 8260D | | 1 | 390212 | 05/09/22 15:52 | BNM | FGS SEA |
| Total/NA | Prep | 5035 | RA | | 390896 | 04/28/22 11:00 | VLF | FGS SEA |
| Total/NA | Analysis | 8260D | RA | 1 | 390936 | 05/17/22 13:36 | BNM | FGS SEA |
| Total/NA | Prep | 5035 | | | 389817 | 05/07/22 12:31 | RJL | FGS SEA |
| Total/NA | Analysis | NWTPH-Gx | | 1 | 389850 | 05/07/22 15:46 | JCM | FGS SEA |
| Total/NA | Prep | 3546 | | | 390291 | 05/11/22 16:47 | DH | FGS SEA |
| Total/NA | Analysis | 8270E SIM | | 1 | 390538 | 05/13/22 15:50 | TL1 | FGS SEA |
| Total/NA | Prep | 3546 | | | 390087 | 05/10/22 13:16 | TOA | FGS SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 390425 | 05/12/22 16:59 | Y1F | FGS SEA |
| Total/NA | Prep | 3050B | | | 389705 | 05/06/22 10:51 | ABP | FGS SEA |
| Total/NA | Analysis | 6020B | | 10 | 390004 | 05/09/22 17:37 | FCW | FGS SEA |
| Total/NA | Prep | 7471A | | | 389923 | 05/09/22 10:43 | ABP | FGS SEA |
| Total/NA | Analysis | 7471A | | 1 | 390079 | 05/09/22 20:22 | ABP | FGS SEA |
| Total/NA | Prep | 3060A | | | 252280 | 05/05/22 21:18 | UDS7 | ELLE |
| Total/NA | Analysis | 7196A | | 1 | 253293 | 05/10/22 00:30 | UDS7 | ELLE |

## Client Sample ID: SS-8-S1-0.5

**Lab Sample ID: 580-113209-5**

**Date Collected: 04/27/22 15:20**

**Matrix: Solid**

**Date Received: 04/28/22 10:54**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 2540G | | 1 | 390091 | 05/10/22 13:38 | JSM | FGS SEA |
| Total/NA | Analysis | 7196A | | 1 | 250116 | 05/12/22 02:35 | BI8H | ELLE |
| Total/NA | Analysis | 9060A | | 1 | 390261 | 05/11/22 14:07 | N1R | FGS SEA |

## Client Sample ID: SS-8-S1-0.5

**Lab Sample ID: 580-113209-5**

**Date Collected: 04/27/22 15:20**

**Matrix: Solid**

**Date Received: 04/28/22 10:54**

**Percent Solids: 86.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 389935 | 04/28/22 11:00 | VLF | FGS SEA |
| Total/NA | Analysis | 8260D | | 1 | 390212 | 05/09/22 16:14 | BNM | FGS SEA |
| Total/NA | Prep | 5035 | RA | | 390896 | 04/28/22 11:00 | VLF | FGS SEA |
| Total/NA | Analysis | 8260D | RA | 1 | 390936 | 05/17/22 13:58 | BNM | FGS SEA |
| Total/NA | Prep | 5035 | | | 389817 | 05/07/22 12:31 | RJL | FGS SEA |
| Total/NA | Analysis | NWTPH-Gx | | 1 | 389850 | 05/07/22 16:09 | JCM | FGS SEA |
| Total/NA | Prep | 3546 | | | 390291 | 05/11/22 16:47 | DH | FGS SEA |
| Total/NA | Analysis | 8270E SIM | | 1 | 390538 | 05/13/22 16:15 | TL1 | FGS SEA |
| Total/NA | Prep | 3546 | | | 390087 | 05/10/22 13:16 | TOA | FGS SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 390425 | 05/12/22 17:19 | Y1F | FGS SEA |
| Total/NA | Prep | 3050B | | | 389705 | 05/06/22 10:51 | ABP | FGS SEA |
| Total/NA | Analysis | 6020B | | 10 | 390004 | 05/09/22 17:22 | FCW | FGS SEA |
| Total/NA | Prep | 7471A | | | 389923 | 05/09/22 10:43 | ABP | FGS SEA |
| Total/NA | Analysis | 7471A | | 1 | 390079 | 05/09/22 20:25 | ABP | FGS SEA |
| Total/NA | Prep | 3060A | | | 252280 | 05/05/22 21:18 | UDS7 | ELLE |
| Total/NA | Analysis | 7196A | | 1 | 253293 | 05/10/22 00:30 | UDS7 | ELLE |

## Client Sample ID: SS-11-S1-0.5

**Lab Sample ID: 580-113209-6**

**Date Collected: 04/27/22 15:40**

**Matrix: Solid**

**Date Received: 04/28/22 10:54**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 2540G | | 1 | 390091 | 05/10/22 13:38 | JSM | FGS SEA |
| Total/NA | Analysis | 7196A | | 1 | 250116 | 05/19/22 11:26 | BI8H | ELLE |
| Total/NA | Analysis | 9060A | | 1 | 390261 | 05/11/22 14:12 | N1R | FGS SEA |

## Client Sample ID: SS-11-S1-0.5

**Lab Sample ID: 580-113209-6**

**Date Collected: 04/27/22 15:40**

**Matrix: Solid**

**Date Received: 04/28/22 10:54**

**Percent Solids: 81.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 389935 | 04/28/22 11:00 | VLF | FGS SEA |
| Total/NA | Analysis | 8260D | | 1 | 390212 | 05/09/22 16:37 | BNM | FGS SEA |
| Total/NA | Prep | 5035 | RA | | 390896 | 04/28/22 11:00 | VLF | FGS SEA |
| Total/NA | Analysis | 8260D | RA | 1 | 390936 | 05/17/22 14:21 | BNM | FGS SEA |

# Lab Chronicle

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

## Client Sample ID: SS-11-S1-0.5

**Date Collected: 04/27/22 15:40**
**Date Received: 04/28/22 10:54**

## Lab Sample ID: 580-113209-6

**Matrix: Solid**
**Percent Solids: 81.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 389817 | 05/07/22 12:31 | RJL | FGS SEA |
| Total/NA | Analysis | NWTPH-Gx | | 1 | 389850 | 05/07/22 16:31 | JCM | FGS SEA |
| Total/NA | Prep | 3546 | | | 390291 | 05/11/22 16:47 | DH | FGS SEA |
| Total/NA | Analysis | 8270E SIM | | 1 | 390538 | 05/13/22 16:40 | TL1 | FGS SEA |
| Total/NA | Prep | 3546 | | | 390087 | 05/10/22 13:16 | TOA | FGS SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 390425 | 05/12/22 14:18 | Y1F | FGS SEA |
| Total/NA | Prep | 3050B | | | 389705 | 05/06/22 10:51 | ABP | FGS SEA |
| Total/NA | Analysis | 6020B | | 10 | 390004 | 05/09/22 17:26 | FCW | FGS SEA |
| Total/NA | Prep | 7471A | | | 389923 | 05/09/22 10:43 | ABP | FGS SEA |
| Total/NA | Analysis | 7471A | | 1 | 390079 | 05/09/22 20:27 | ABP | FGS SEA |
| Total/NA | Prep | 3060A | | | 252280 | 05/05/22 21:18 | UDS7 | ELLE |
| Total/NA | Analysis | 7196A | | 1 | 253293 | 05/10/22 00:30 | UDS7 | ELLE |

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

FGS SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Accreditation/Certification Summary

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

## Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Washington | State | C788 | 07-13-22 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 2540G | | Solid | Percent Moisture |
| 2540G | | Solid | Percent Solids |
| 9060A | | Solid | Total Organic Carbon - Average Dup |

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| A2LA | Dept. of Defense ELAP | 1.01 | 11-30-22 |
| A2LA | ISO/IEC 17025 | 0001.01 | 11-30-22 |
| Alaska | State | PA00009 | 06-30-22 |
| Alaska (UST) | State | 17-027 | 02-28-23 |
| Arizona | State | AZ0780 | 03-12-23 |
| Arkansas DEQ | State | 88-0660 | 08-10-22 |
| California | State | 2792 | 11-30-22 |
| Colorado | State | PA00009 | 06-30-22 |
| Connecticut | State | PH-0746 | 06-30-23 |
| DE Haz. Subst. Cleanup Act (HSCA) | State | 019-006 (PA cert) | 01-31-23 |
| Delaware (DW) | State | N/A | 01-31-23 |
| Florida | NELAP | E87997 | 06-30-22 |
| Georgia (DW) | State | C048 | 01-31-23 |
| Hawaii | State | N/A | 01-31-23 |
| Illinois | NELAP | 200027 | 01-31-23 |
| Iowa | State | 361 | 03-02-22 * |
| Kansas | NELAP | E-10151 | 10-31-22 |
| Kentucky (DW) | State | KY90088 | 12-31-22 |
| Kentucky (UST) | State | 1.01 | 11-30-22 |
| Kentucky (WW) | State | KY90088 | 01-01-23 |
| Louisiana | NELAP | 02055 | 06-30-22 |
| Maine | State | 2019012 | 03-12-23 |
| Maryland | State | 100 | 06-30-22 |
| Massachusetts | State | M-PA009 | 06-30-22 |
| Michigan | State | 9930 | 01-31-23 |
| Minnesota | NELAP | 042-999-487 | 12-31-22 |
| Missouri | State | 450 | 01-31-25 |
| Montana (DW) | State | 0098 | 01-01-23 |
| Montana (UST) | State | <cert No.> | 02-01-23 |
| Nebraska | State | NE-OS-32-17 | 01-31-23 |
| New Hampshire | NELAP | 2730 | 01-10-23 |
| New Jersey | NELAP | PA011 | 06-30-22 |
| New York | NELAP | 10670 | 04-01-23 |
| North Carolina (DW) | State | 42705 | 07-31-22 |
| North Carolina (WW/SW) | State | 521 | 12-31-22 |
| North Dakota | State | R-205 | 01-31-23 |
| Oklahoma | NELAP | R-205 | 08-31-22 |
| Oregon | NELAP | PA200001 | 09-11-22 |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Accreditation/Certification Summary

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| PALA | Canada | 1978 | 09-16-24 |
| Pennsylvania | NELAP | 36-00037 | 01-31-23 |
| Rhode Island | State | LAO00338 | 12-30-22 |
| South Carolina | State | 89002 | 01-31-23 |
| Tennessee | State | 02838 | 01-31-23 |
| Texas | NELAP | T104704194-21-40 | 08-31-22 |
| USDA | US Federal Programs | P330-19-00197 | 07-03-22 |
| Vermont | State | VT - 36037 | 10-28-22 |
| Virginia | NELAP | 460182 | 06-14-22 |
| Washington | State | C457 | 04-11-23 |
| West Virginia (DW) | State | 9906 C | 12-31-22 |
| West Virginia DEP | State | 055 | 07-01-22 |
| Wyoming | State | 8TMS-L | 01-31-23 |
| Wyoming (UST) | A2LA | 1.01 | 11-30-22 |

# Sample Summary

Client: Hart Crowser, Inc.
Project/Site: Kosmos

Job ID: 580-113209-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 580-113209-1 | SS-1-S1-0.5 | Solid | 04/27/22 16:00 | 04/28/22 10:54 |
| 580-113209-3 | SS-7-R-S1-0.5 | Solid | 04/27/22 17:00 | 04/28/22 10:54 |
| 580-113209-4 | SS-4-S1-0.5 | Solid | 04/27/22 12:15 | 04/28/22 10:54 |
| 580-113209-5 | SS-8-S1-0.5 | Solid | 04/27/22 15:20 | 04/28/22 10:54 |
| 580-113209-6 | SS-11-S1-0.5 | Solid | 04/27/22 15:40 | 04/28/22 10:54 |

**Eurofins Environmental Testing Northwest, LLC**
5755 8th Street East
Tacoma, WA 98424

# Chain of Custody Record

580-113209 Chain of Custody

eurofins Environment Testing America

| Client Information | Sampler: A. NAKAMURA / B. LYRE-GOLDSTEIN | Lab PM: | COC No: |
|---|---|---|---|
| Client Contact: ANNIE GODWIN | Phone: | E-Mail: ANNIE.GODWIN@HARTCROWSER.COM | State of Origin: WA | Page: Page 1 of 1 |
| Company: HART CROWSER (HARLEY & ALDRICH) | PWSID: | | | Job #: |
| Address: 3131 ELLIOT AVE # 600 | Due Date Requested: | | | |
| City: SEATTLE | TAT Requested (days): | | | |
| State, Zip: WA 98121 | Compliance Project: Δ Yes Δ No | | | |
| Phone: | PO #: Purchase Order not required | | | |
| Email: | WO #: | | | |
| Project Name: KOSMOS | Project #: | | | |
| Site: | SSOW#: | | | |

**Analysis Requested**

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | TPH-G | TPH-D | TPH-O | VOCs | PAHs | Metals* | TOTAL ORGANIC CARBON (TOC) | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | | | | | | | | | |
| SS-1-S1-0.5 | 4/27/2022 | 1600 | G | S | | | X | X | X | X | X | X | X | | * METALS = ARSENIC, BARIUM, |
| SS-7-S1-0.5 | | 1430 | | | | | X | X | X | X | X | X | X | | CADMIUM, CHROMIUM III, |
| SS-7-R-S1-0.5 | | 1700 | | | | | X | X | X | X | X | X | X | | CHROMIUM VI, Cu, |
| SS-4-S1-0.5 | | 1215 | | | | | X | X | X | X | X | X | X | | Pb, Hg, Ni, SELENIUM, SILVER, |
| SS-8-S1-0.5 | | 1520 | | | | | X | X | X | X | X | X | X | | ZN |
| SS-11-S1-0.5 | | 6540 | | | | | X | X | X | X | X | X | X | | |
| | | | | | | | | | | | | | | | SAMPLES MAY CONTAIN CONCRETE |
| | | | | | | | | | | | | | | | SAND - UP TO PEA SIZED |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

**Preservation Codes:**

| | |
|---|---|
| A - HCL | M - Hexane |
| B - NaOH | N - None |
| C - Zn Acetate | O - AsNaO2 |
| D - Nitric Acid | P - Na2O4S |
| E - NaHSO4 | Q - Na2SO3 |
| F - MeOH | R - Na2S2O3 |
| G - Amchlor | S - H2SO4 |
| H - Ascorbic Acid | T - TSP Dodecahydrate |
| I - Ice | U - Acetone |
| J - DI Water | V - MCAA |
| K - EDTA | W - pH 4-5 |
| L - EDA | Z - other (specify) |

Other:

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

| Empty Kit Relinquished by: | Date: | Time: | Method of Shipment: |
|---|---|---|---|

| | Date/Time: | Company | Received by: | Date/Time: | Company |
|---|---|---|---|---|---|
| Relinquished by: Bikle Lyre-Goldstein | 4/28/2022 1054 | HART CROWSER | Tom Blankinship | 4/28/22 1054 | |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: clidn Lg Blu/wet/bub A3 4.1/4.3



5/25/2022

Ver: 01/16/2019

**Eurofins Seattle**
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

# Chain of Custody Record

eurofins | Environment Testing America

| Client Information (Sub Contract Lab) | Sampler: | Lab PM: Dutton, Tracy L | Carrier Tracking No(s): | COC No: 580-103152.1 |
|---|---|---|---|---|
| Client Contact: Shipping/Receiving | Phone: | E-Mail: Tracy.Dutton@et.eurofinsus.com | State of Origin: Washington | Page: Page 1 of 1 |
| Company: Eurofins Lancaster Laboratories Environm | | Accreditations Required (See note): State - Washington | | Job #: 580-113209-1 |
| Address: 2425 New Holland Pike, | Due Date Requested: 5/11/2022 | | | |
| City: Lancaster | TAT Requested (days): | | | |
| State, Zip: PA, 17601 | PO #: | | | |
| Phone: 717-656-2300(Tel) | WO #: | | | |
| Email: | Project #: 58017940 | | | |
| Project Name: Kosmos | SSOW#: | | | |
| Site: | | | | |

**Analysis Requested**

Preservation Codes:

| | |
|---|---|
| A - HCL | M - Hexane |
| B - NaOH | N - None |
| C - Zn Acetate | O - AsNaO2 |
| D - Nitric Acid | P - Na2O4S |
| E - NaHSO4 | Q - Na2SO3 |
| F - MeOH | R - Na2S2O3 |
| G - Amchlor | S - H2SO4 |
| H - Ascorbic Acid | T - TSP Dodecahydrate |
| I - Ice | U - Acetone |
| J - DI Water | V - MCAA |
| K - EDTA | W - pH 4-5 |
| L - EDA | Z - other (specify) |

Other:

| Sample Identification - Client ID (Lab ID) | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | 7196A/3060A | 7196A_CR3/ Chromium, Trivalent (Colorimetric) | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | | | | |
| SS-1-S1-0.5 (580-113209-1) | 4/27/22 | 16:00 Pacific | | Solid | | | X | X | 1 | |
| SS-7-R-S1-0.5 (580-113209-3) | 4/27/22 | 17:00 Pacific | | Solid | | | X | X | 1 | |
| SS-4-S1-0.5 (580-113209-4) | 4/27/22 | 12:15 Pacific | | Solid | | | X | X | 1 | |
| SS-8-S1-0.5 (580-113209-5) | 4/27/22 | 15:20 Pacific | | Solid | | | X | X | 1 | |
| SS-11-S1-0.5 (580-113209-6) | 4/27/22 | 15:40 Pacific | | Solid | | | X | X | 1 | |

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing Northwest, LLC.

| Possible Hazard Identification | Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) |
|---|---|
| Unconfirmed | ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months |
| Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2 | Special Instructions/QC Requirements: |

| Empty Kit Relinquished by: | Date: | Time: | Method of Shipment: |
|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Relinquished by: Tom Blank | Date/Time: 5/2/22 | Company | Received by: | Date/Time: | Company |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: 5/3/22 1010 | Company QUET |

| Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 5.6 |
|---|---|---|

Ver: 06/08/2021

**Eurofins Seattle**
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

# Chain of Custody Record

eurofins | Environment Testing America

| Client Information (Sub Contract Lab) | Sampler: | Lab PM: Dutton, Tracy L | Carrier Tracking No(s): | COC No: 580-103152.1 |
|---|---|---|---|---|
| Client Contact: Shipping/Receiving | Phone: | E-Mail: Tracy.Dutton@et.eurofinsus.com | State of Origin: Washington | Page: Page 1 of 1 |
| Company: Eurofins Lancaster Laboratories Environm | | Accreditations Required (See note): State - Washington | | Job #: 580-113209-2 |
| Address: 2425 New Holland Pike, . | Due Date Requested: 5/8/2022 | | | |
| City: Lancaster | TAT Requested (days): | | | |
| State, Zip: PA, 17601 | | | | |
| Phone: 717-656-2300(Tel) | PO #: | | | |
| Email: | WO #: | | | |
| Project Name: Kosmos | Project #: 58017940 | | | |
| Site: | SSOW#: | | | |

**Analysis Requested**

**Preservation Codes:**

| | |
|---|---|
| A - HCL | M - Hexane |
| B - NaOH | N - None |
| C - Zn Acetate | O - AsNaO2 |
| D - Nitric Acid | P - Na2O4S |
| E - NaHSO4 | Q - Na2SO3 |
| F - MeOH | R - Na2S2O3 |
| G - Amchlor | S - H2SO4 |
| H - Ascorbic Acid | T - TSP Dodecahydrate |
| I - Ice | U - Acetone |
| J - DI Water | V - MCAA |
| K - EDTA | W - pH 4-5 |
| L - EDA | Z - other (specify) |

Other:

| Sample Identification - Client ID (Lab ID) | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | 7196A/3060A (Hold) | 7196A_CR3/ Chromium, Trivalent (Colorimetric) (Hold) | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | | | | |
| SS-7-S1-0.5 (580-113209-2) | 4/27/22 | 14:30 Pacific | | Solid | | | X | X | 1 | |

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing Northwest, LLC.

| *Possible Hazard Identification* | *Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)* |
|---|---|
| *Unconfirmed* | ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months* |
| Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 0 | Special Instructions/QC Requirements: |

| Empty Kit Relinquished by: | Date: | Time: | Method of Shipment: |
|---|---|---|---|

| | Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |
|---|---|---|---|---|---|---|
| 1 | Tom Blumy | 5/2/22 | | | | |
| 2 | Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |
| 3 | Relinquished by: | Date/Time: | Company | Received by: | Date/Time: 5/3/22 1040 | Company ECLET |

| Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 5.6 |
|---|---|---|

SM

Ver: 06/08/2021

# Login Sample Receipt Checklist

Client: Hart Crowser, Inc.

Job Number: 580-113209-1

**Login Number: 113209**
**List Number: 1**
**Creator: Grable, Heather D**

**List Source: Eurofins Seattle**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

# Login Sample Receipt Checklist

Client: Hart Crowser, Inc.

Job Number: 580-113209-1

**Login Number: 113209**
**List Number: 2**
**Creator: McCaskey, Jonathan**

**List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**
**List Creation: 05/03/22 12:30 PM**

| Question | Answer | Comment |
|---|---|---|
| The cooler's custody seal is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable (</=6C, not frozen). | True | |
| Cooler Temperature is recorded. | True | |
| WV: Container Temperature is acceptable (</=6C, not frozen). | N/A | |
| WV:  Container Temperature is recorded. | N/A | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses. | True | |
| Is the Field Sampler's name present on COC? | False | Received project as a subcontract. |
| Sample custody seals are intact. | N/A | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 21, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on June 28, 2022 from the Kosmos 0202832.001, F&BI 206500 project. There are 59 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Andrew Nakahara
HNA0721R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 28, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos 0202832.001, F&BI 206500 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 206500 -01 | MW-4S-S1 |
| 206500 -02 | MW-4S-S2 |
| 206500 -03 | MW-4S-S3 |
| 206500 -04 | MW-4S-S4 |
| 206500 -05 | MW-3S-S1 |
| 206500 -06 | MW-3S-S2 |
| 206500 -07 | MW-3S-S3 |
| 206500 -08 | MW-3S-S200 |
| 206500 -09 | MW-3S-S4 |
| 206500 -10 | MW-2S-S1 |
| 206500 -11 | MW-2S-S2 |
| 206500 -12 | MW-3S-S3 |
| 206500 -13 | MW-2S-S4 |
| 206500 -14 | MW-1S-S1 |
| 206500 -15 | MW-1S-S2 |
| 206500 -16 | MW-1S-S3 |
| 206500 -17 | MW-1S-S4 |

Samples MW-4S-S2, MW-4S-S4, MW-3S-S1, MW-3S-S2, MW-3S-S3, MW-3S-S200, MW-2S-S2, MW-3S-S3, MW-1S-S2, and MW-1S-S3 were sent to Fremont Analytical for hexavalent chromium and EPH analyses. In addition, these samples were sent to Onsite Environmental for VPH anlaysis. The reports are enclosed.

Several metals in the 6020B matrix spike failed the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

Methylene chloride was detected in the 8260D analysis of several samples. The data were flagged as due to laboratory contamination.

The 8260D matrix spike and matrix spike duplicate failed the relative percent difference for several compounds. The analytes were not detected therefore the data were acceptable.

The 8260D calibration standard failed the acceptance criteria for several analytes. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500
Date Extracted: 07/07/22
Date Analyzed: 07/07/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| MW-4S-S2<br>206500-02 | <5 | 116 |
| MW-4S-S4<br>206500-04 | <5 | 83 |
| MW-3S-S1<br>206500-05 | 42 | 148 |
| MW-3S-S2<br>206500-06 | 16 | 105 |
| MW-3S-S3<br>206500-07 | <5 | 107 |
| MW-3S-S200<br>206500-08 | 50 | 120 |
| MW-2S-S1<br>206500-10 | <5 | 115 |
| MW-3S-S3<br>206500-12 | <5 | 103 |
| MW-1S-S2<br>206500-15 | <5 | 136 |
| MW-1S-S3<br>206500-16 | <5 | 127 |
| Method Blank<br>02-1549 MB | <5 | 116 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500
Date Extracted: 07/07/22
Date Analyzed: 07/07/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Gasoline Range | Surrogate (% Recovery)<br>(Limit 50-150) |
|---|---|---|---|---|---|---|
| MW-4S-S1<br>206500-01 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 102 |
| MW-4S-S3<br>206500-03 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 98 |
| MW-3S-S4<br>206500-09 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 87 |
| MW-2S-S2<br>206500-11 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 101 |
| MW-2S-S4<br>206500-13 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 100 |
| MW-1S-S1<br>206500-14 | <0.02 | <0.02 | 0.032 | <0.06 | 9.1 | 104 |
| MW-1S-S4<br>206500-17 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 104 |
| Method Blank<br>02-1549 MB | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 101 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500
Date Extracted: 07/05/22
Date Analyzed: 07/05/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 48-168) |
|---|---|---|---|
| MW-4S-S1<br>206500-01 | <50 | <250 | 87 |
| MW-4S-S2<br>206500-02 | <50 | <250 | 93 |
| MW-4S-S3<br>206500-03 | <50 | <250 | 97 |
| MW-4S-S4<br>206500-04 | <50 | <250 | 94 |
| MW-3S-S1<br>206500-05 | 640 | <250 | 97 |
| MW-3S-S2<br>206500-06 | 310 | <250 | 94 |
| MW-3S-S3<br>206500-07 | <50 | <250 | 94 |
| MW-3S-S200<br>206500-08 | 1,100 | <250 | 95 |
| MW-3S-S4<br>206500-09 | <50 | <250 | 95 |
| MW-2S-S1<br>206500-10 | <50 | <250 | 92 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500
Date Extracted: 07/05/22
Date Analyzed: 07/05/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 48-168) |
|---|---|---|---|
| MW-2S-S2<br>206500-11 | <50 | <250 | 95 |
| MW-3S-S3<br>206500-12 | <50 | <250 | 94 |
| MW-2S-S4<br>206500-13 | <50 | <250 | 93 |
| MW-1S-S1<br>206500-14 | <50 | <250 | 94 |
| MW-1S-S2<br>206500-15 | <50 | <250 | 93 |
| MW-1S-S3<br>206500-16 | <50 | <250 | 98 |
| MW-1S-S4<br>206500-17 | <50 | <250 | 94 |
| Method Blank<br>02-1562 MB | <50 | <250 | 99 |
| Method Blank<br>02-1585 MB | <50 | <250 | 95 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-02 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-02.040 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.30 |
| Barium | 41.5 |
| Cadmium | <1 |
| Lead | 2.26 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-02 x5 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-02 x5.048 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 15.2 |
| Copper | 44.8 |
| Nickel | 17.2 |
| Zinc | 61.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4S-S4 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-04 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-04.098 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 4.97 |
| Barium | 26.5 |
| Cadmium | <1 |
| Lead | 2.41 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4S-S4 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-04 x5 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-04 x5.139 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 8.91 |
| Copper | 42.2 |
| Nickel | 8.95 |
| Zinc | 45.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S-S1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-05 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-05.099 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.62 |
| Barium | 77.6 |
| Cadmium | <1 |
| Lead | 3.37 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S-S1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-05 x5 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-05 x5.140 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 22.8 |
| Copper | 69.0 |
| Nickel | 22.6 |
| Zinc | 66.0 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-06 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-06.100 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.39 |
| Barium | 46.9 |
| Cadmium | <1 |
| Lead | 2.62 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-06 x5 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-06 x5.143 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 17.0 |
| Copper | 47.2 |
| Nickel | 15.8 |
| Zinc | 54.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-07 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-07.101 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.29 |
| Barium | 35.8 |
| Cadmium | <1 |
| Lead | 3.42 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-07 x5 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-07 x5.144 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 8.54 |
| Copper | 40.9 |
| Nickel | 9.08 |
| Zinc | 45.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S-S200 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-08 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-08.102 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.44 |
| Barium | 56.3 |
| Cadmium | <1 |
| Lead | 2.89 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S-S200 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-08 x5 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-08 x5.145 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 18.9 |
| Copper | 50.7 |
| Nickel | 17.1 |
| Zinc | 55.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-11 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-11.103 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.25 |
| Barium | 49.5 |
| Cadmium | <1 |
| Lead | 2.55 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-11 x5 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-11 x5.146 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 17.3 |
| Copper | 48.7 |
| Nickel | 15.9 |
| Zinc | 53.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-12 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-12.104 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.53 |
| Barium | 34.3 |
| Cadmium | <1 |
| Lead | 2.55 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-12 x5 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-12 x5.147 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 10.6 |
| Copper | 47.0 |
| Nickel | 9.56 |
| Zinc | 45.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-15 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-15.107 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.52 |
| Barium | 33.1 |
| Cadmium | <1 |
| Lead | 2.01 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-15 x5 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-15 x5.148 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 13.8 |
| Copper | 35.6 |
| Nickel | 12.5 |
| Zinc | 47.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-16 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-16.108 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.50 |
| Barium | 25.1 |
| Cadmium | <1 |
| Lead | 2.57 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | 206500-16 x5 |
| Date Analyzed: | 07/08/22 | Data File: | 206500-16 x5.149 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 7.44 |
| Copper | 41.2 |
| Nickel | 8.11 |
| Zinc | 43.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/08/22 | Lab ID: | I2-463 mb |
| Date Analyzed: | 07/08/22 | Data File: | I2-463 mb.038 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <0.5 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500
Date Extracted: 07/08/22
Date Analyzed: 07/12/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| MW-4S-S2<br>206500-02 | <0.1 |
| MW-4S-S4<br>206500-04 | <0.1 |
| MW-3S-S1<br>206500-05 | <0.1 |
| MW-3S-S2<br>206500-06 | <0.1 |
| MW-3S-S3<br>206500-07 | <0.1 |
| MW-3S-S200<br>206500-08 | <0.1 |
| MW-2S-S2<br>206500-11 | <0.1 |
| MW-3S-S3<br>206500-12 | <0.1 |
| MW-1S-S2<br>206500-15 | <0.1 |
| MW-1S-S3<br>206500-16 | <0.1 |
| Method Blank<br>i2-463 MB | <0.1 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-02 1/0.25 |
| Date Analyzed: | 07/07/22 | Data File: | 070721.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 79 | 128 |
| Toluene-d8 | 95 | 84 | 121 |
| 4-Bromofluorobenzene | 99 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | 0.0022 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | 0.66 ca lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4S-S4 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-04 1/0.25 |
| Date Analyzed: | 07/07/22 | Data File: | 070722.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 79 | 128 |
| Toluene-d8 | 100 | 84 | 121 |
| 4-Bromofluorobenzene | 96 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | 0.51 ca lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-05 1/0.25 |
| Date Analyzed: | 07/07/22 | Data File: | 070723.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 112 | 79 | 128 |
| Toluene-d8 | 101 | 84 | 121 |
| 4-Bromofluorobenzene | 95 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | 0.0012 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | 0.0044 |
| Hexane | <0.25 | o-Xylene | 0.0039 |
| Methylene chloride | 0.34 ca lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | 0.12 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | 0.058 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | 0.094 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-06 1/0.25 |
| Date Analyzed: | 07/07/22 | Data File: | 070724.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 79 | 128 |
| Toluene-d8 | 113 | 84 | 121 |
| 4-Bromofluorobenzene | 102 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | 0.0041 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | 0.015 |
| Hexane | <0.25 | o-Xylene | 0.027 |
| Methylene chloride | 0.36 ca lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | 0.17 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | 0.29 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | 0.28 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | 0.14 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | 0.20 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0037 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-07 1/0.25 |
| Date Analyzed: | 07/07/22 | Data File: | 070725.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 88 | 79 | 128 |
| Toluene-d8 | 90 | 84 | 121 |
| 4-Bromofluorobenzene | 101 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | 0.30 ca lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | 0.0040 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S200 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-08 1/0.25 |
| Date Analyzed: | 07/07/22 | Data File: | 070726.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 79 | 128 |
| Toluene-d8 | 111 | 84 | 121 |
| 4-Bromofluorobenzene | 98 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | 0.0024 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | 0.0096 |
| Hexane | <0.25 | o-Xylene | 0.016 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | 0.11 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | 0.20 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | 0.18 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | 0.086 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | 0.15 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0022 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-11 1/0.25 |
| Date Analyzed: | 07/07/22 | Data File: | 070727.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | 79 | 128 |
| Toluene-d8 | 99 | 84 | 121 |
| 4-Bromofluorobenzene | 99 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-12 1/0.25 |
| Date Analyzed: | 07/07/22 | Data File: | 070728.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 79 | 128 |
| Toluene-d8 | 100 | 84 | 121 |
| 4-Bromofluorobenzene | 101 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-15 1/0.25 |
| Date Analyzed: | 07/07/22 | Data File: | 070729.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 79 | 128 |
| Toluene-d8 | 107 | 84 | 121 |
| 4-Bromofluorobenzene | 99 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | 0.37 ca lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-16 1/0.25 |
| Date Analyzed: | 07/07/22 | Data File: | 070730.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 93 | 79 | 128 |
| Toluene-d8 | 94 | 84 | 121 |
| 4-Bromofluorobenzene | 99 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | 0.0025 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | 0.21 ca lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 02-1573 mb 1/0.25 |
| Date Analyzed: | 07/08/22 | Data File: | 070825.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 108 | 79 | 128 |
| Toluene-d8 | 102 | 84 | 121 |
| 4-Bromofluorobenzene | 99 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-02 |
| Date Analyzed: | 07/08/22 | Data File: | 070813.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 41 | 24 | 111 |
| Phenol-d6 | 49 | 37 | 116 |
| Nitrobenzene-d5 | 51 | 38 | 117 |
| 2-Fluorobiphenyl | 59 | 45 | 117 |
| 2,4,6-Tribromophenol | 73 | 11 | 158 |
| Terphenyl-d14 | 99 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4S-S4 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-04 |
| Date Analyzed: | 07/08/22 | Data File: | 070814.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 60 | 24 | 111 |
| Phenol-d6 | 62 | 37 | 116 |
| Nitrobenzene-d5 | 64 | 38 | 117 |
| 2-Fluorobiphenyl | 75 | 45 | 117 |
| 2,4,6-Tribromophenol | 96 | 11 | 158 |
| Terphenyl-d14 | 110 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-05 |
| Date Analyzed: | 07/08/22 | Data File: | 070815.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 67 | 24 | 111 |
| Phenol-d6 | 82 | 37 | 116 |
| Nitrobenzene-d5 | 83 | 38 | 117 |
| 2-Fluorobiphenyl | 95 | 45 | 117 |
| 2,4,6-Tribromophenol | 103 | 11 | 158 |
| Terphenyl-d14 | 107 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.020 |
| 1-Methylnaphthalene | 0.045 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.13 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.051 |
| Benz(a)anthracene | 0.0074 |
| Chrysene | 0.018 |
| Benzo(a)pyrene | 0.0031 |
| Benzo(b)fluoranthene | 0.0034 |
| Benzo(k)fluoranthene | 0.0024 |
| Indeno(1,2,3-cd)pyrene | 0.0025 |
| Dibenz(a,h)anthracene | 0.0028 |
| Benzo(g,h,i)perylene | 0.0029 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-06 |
| Date Analyzed: | 07/08/22 | Data File: | 070816.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 75 | 24 | 111 |
| Phenol-d6 | 89 | 37 | 116 |
| Nitrobenzene-d5 | 98 | 38 | 117 |
| 2-Fluorobiphenyl | 91 | 45 | 117 |
| 2,4,6-Tribromophenol | 95 | 11 | 158 |
| Terphenyl-d14 | 110 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.13 |
| 1-Methylnaphthalene | 0.36 |
| Acenaphthylene | <0.002 |
| Acenaphthene | 0.047 |
| Fluorene | 0.23 |
| Phenanthrene | 0.44 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.038 |
| Benz(a)anthracene | 0.0035 |
| Chrysene | 0.010 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-07 |
| Date Analyzed: | 07/08/22 | Data File: | 070817.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 24 | 111 |
| Phenol-d6 | 70 | 37 | 116 |
| Nitrobenzene-d5 | 60 | 38 | 117 |
| 2-Fluorobiphenyl | 76 | 45 | 117 |
| 2,4,6-Tribromophenol | 96 | 11 | 158 |
| Terphenyl-d14 | 105 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | 0.0026 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S200 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-08 |
| Date Analyzed: | 07/08/22 | Data File: | 070818.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 71 | 24 | 111 |
| Phenol-d6 | 78 | 37 | 116 |
| Nitrobenzene-d5 | 121 ip | 38 | 117 |
| 2-Fluorobiphenyl | 89 | 45 | 117 |
| 2,4,6-Tribromophenol | 96 | 11 | 158 |
| Terphenyl-d14 | 101 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.89 |
| 1-Methylnaphthalene | 1.7 ve |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.89 |
| Phenanthrene | 1.5 ve |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.11 |
| Benz(a)anthracene | 0.012 |
| Chrysene | 0.034 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S200 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-08 1/10 |
| Date Analyzed: | 07/11/22 | Data File: | 071110.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 86 | 24 | 111 |
| Phenol-d6 | 81 | 37 | 116 |
| Nitrobenzene-d5 | 106 | 38 | 117 |
| 2-Fluorobiphenyl | 93 | 45 | 117 |
| 2,4,6-Tribromophenol | 96 | 11 | 158 |
| Terphenyl-d14 | 100 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| 1-Methylnaphthalene | 1.8 |
| Phenanthrene | 1.6 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-11 |
| Date Analyzed: | 07/08/22 | Data File: | 070819.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 63 | 24 | 111 |
| Phenol-d6 | 65 | 37 | 116 |
| Nitrobenzene-d5 | 62 | 38 | 117 |
| 2-Fluorobiphenyl | 77 | 45 | 117 |
| 2,4,6-Tribromophenol | 91 | 11 | 158 |
| Terphenyl-d14 | 97 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.0038 |
| 1-Methylnaphthalene | 0.0076 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.0048 |
| Phenanthrene | 0.0088 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.0028 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-12 |
| Date Analyzed: | 07/08/22 | Data File: | 070820.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 65 | 24 | 111 |
| Phenol-d6 | 71 | 37 | 116 |
| Nitrobenzene-d5 | 65 | 38 | 117 |
| 2-Fluorobiphenyl | 78 | 45 | 117 |
| 2,4,6-Tribromophenol | 99 | 11 | 158 |
| Terphenyl-d14 | 105 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1S-S2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-15 |
| Date Analyzed: | 07/08/22 | Data File: | 070821.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 67 | 24 | 111 |
| Phenol-d6 | 73 | 37 | 116 |
| Nitrobenzene-d5 | 67 | 38 | 117 |
| 2-Fluorobiphenyl | 83 | 45 | 117 |
| 2,4,6-Tribromophenol | 103 | 11 | 158 |
| Terphenyl-d14 | 110 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1S-S3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 206500-16 |
| Date Analyzed: | 07/08/22 | Data File: | 070822.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 75 | 24 | 111 |
| Phenol-d6 | 79 | 37 | 116 |
| Nitrobenzene-d5 | 80 | 38 | 117 |
| 2-Fluorobiphenyl | 82 | 45 | 117 |
| 2,4,6-Tribromophenol | 83 | 11 | 158 |
| Terphenyl-d14 | 92 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832.001 |
| Date Extracted: | 07/07/22 | Lab ID: | 02-1601 mb |
| Date Analyzed: | 07/08/22 | Data File: | 070809.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 69 | 24 | 111 |
| Phenol-d6 | 72 | 37 | 116 |
| Nitrobenzene-d5 | 73 | 38 | 117 |
| 2-Fluorobiphenyl | 89 | 45 | 117 |
| 2,4,6-Tribromophenol | 98 | 11 | 158 |
| Terphenyl-d14 | 114 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 206500-01 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Benzene | mg/kg (ppm) | <0.02 | <0.02 | nm |
| Toluene | mg/kg (ppm) | <0.02 | <0.02 | nm |
| Ethylbenzene | mg/kg (ppm) | <0.02 | <0.02 | nm |
| Xylenes | mg/kg (ppm) | <0.06 | <0.06 | nm |
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | mg/kg (ppm) | 0.5 | 89 | 69-120 |
| Toluene | mg/kg (ppm) | 0.5 | 89 | 70-117 |
| Ethylbenzene | mg/kg (ppm) | 0.5 | 89 | 65-123 |
| Xylenes | mg/kg (ppm) | 1.5 | 90 | 66-120 |
| Gasoline | mg/kg (ppm) | 20 | 115 | 71-131 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 207026-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 96 | 96 | 63-146 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 106 | 79-144 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 206500-10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 57 | 100 | 95 | 73-135 | 5 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 102 | 74-139 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 206500-02 x5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | <5 | 71 vo | 76 | 75-125 | 7 |
| Barium | mg/kg (ppm) | 50 | 34.4 | 85 | 81 | 75-125 | 5 |
| Cadmium | mg/kg (ppm) | 10 | <5 | 93 | 88 | 75-125 | 6 |
| Chromium | mg/kg (ppm) | 50 | 10.9 | 77 | 77 | 75-125 | 0 |
| Copper | mg/kg (ppm) | 50 | 32.2 | 76 | 77 | 75-125 | 1 |
| Lead | mg/kg (ppm) | 50 | <5 | 94 | 89 | 75-125 | 5 |
| Nickel | mg/kg (ppm) | 25 | 12.4 | 81 | 78 | 75-125 | 4 |
| Selenium | mg/kg (ppm) | 5 | <5 | 75 | 78 | 75-125 | 4 |
| Silver | mg/kg (ppm) | 10 | <5 | 72 vo | 88 | 75-125 | 20 |
| Zinc | mg/kg (ppm) | 50 | 44.0 | 55 b | 98 | 75-125 | 56 b |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 91 | 80-120 |
| Barium | mg/kg (ppm) | 50 | 95 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 95 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 92 | 80-120 |
| Copper | mg/kg (ppm) | 50 | 96 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 98 | 80-120 |
| Nickel | mg/kg (ppm) | 25 | 96 | 80-120 |
| Selenium | mg/kg (ppm) | 5 | 94 | 80-120 |
| Silver | mg/kg (ppm) | 10 | 96 | 80-120 |
| Zinc | mg/kg (ppm) | 50 | 95 | 80-120 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 206500-02 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 5 | <0.1 | 104 | 111 | 71-125 | 7 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 5 | 104 | 68-125 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 206513-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | <0.5 | 17 | 12 | 10-142 | 34 vo |
| Chloromethane | mg/kg (ppm) | 1 | <0.5 | 38 | 32 | 10-126 | 17 |
| Vinyl chloride | mg/kg (ppm) | 1 | <0.05 | 41 | 32 | 10-138 | 25 vo |
| Bromomethane | mg/kg (ppm) | 1 | <0.5 | 67 | 49 | 10-163 | 31 vo |
| Chloroethane | mg/kg (ppm) | 1 | <0.5 | 55 | 42 | 10-176 | 27 vo |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | <0.5 | 46 | 33 | 10-176 | 33 vo |
| Acetone | mg/kg (ppm) | 5 | <5 | 61 | 48 | 10-163 | 24 vo |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 53 | 41 | 10-160 | 26 vo |
| Hexane | mg/kg (ppm) | 1 | <0.25 | 38 | 28 | 10-137 | 30 vo |
| Methylene chloride | mg/kg (ppm) | 1 | <0.5 | 78 | 55 | 10-156 | 35 vo |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | <0.05 | 62 | 48 | 21-145 | 25 vo |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 58 | 45 | 14-137 | 25 vo |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | <0.05 | 57 | 44 | 19-140 | 26 vo |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 83 | 61 | 10-158 | 31 vo |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 64 | 50 | 25-135 | 25 vo |
| Chloroform | mg/kg (ppm) | 1 | <0.05 | 46 | 30 | 21-145 | 42 vo |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | <1 | 62 | 52 | 19-147 | 18 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | <0.05 | 61 | 48 | 12-160 | 24 vo |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | <0.05 | 58 | 45 | 10-156 | 25 vo |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 55 | 42 | 17-140 | 27 vo |
| Carbon tetrachloride | mg/kg (ppm) | 1 | <0.05 | 56 | 43 | 9-164 | 26 vo |
| Benzene | mg/kg (ppm) | 1 | <0.03 | 61 | 48 | 29-129 | 24 vo |
| Trichloroethene | mg/kg (ppm) | 1 | <0.02 | 55 | 42 | 21-139 | 27 vo |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 60 | 49 | 30-135 | 20 |
| Bromodichloromethane | mg/kg (ppm) | 1 | <0.05 | 61 | 48 | 23-155 | 24 vo |
| Dibromomethane | mg/kg (ppm) | 1 | <0.05 | 67 | 52 | 23-145 | 25 vo |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | <1 | 68 | 56 | 24-155 | 19 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 66 | 52 | 28-144 | 24 vo |
| Toluene | mg/kg (ppm) | 1 | <0.05 | 62 | 50 | 35-130 | 21 vo |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 68 | 53 | 26-149 | 25 vo |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | <0.05 | 77 | 57 | 10-205 | 30 vo |
| 2-Hexanone | mg/kg (ppm) | 5 | <0.5 | 66 | 55 | 15-166 | 18 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 65 | 53 | 31-137 | 20 |
| Tetrachloroethene | mg/kg (ppm) | 1 | <0.025 | 57 | 45 | 20-133 | 24 vo |
| Dibromochloromethane | mg/kg (ppm) | 1 | <0.05 | 74 | 56 | 28-150 | 28 vo |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | <0.05 | 67 | 52 | 28-142 | 25 vo |
| Chlorobenzene | mg/kg (ppm) | 1 | <0.05 | 67 | 53 | 32-129 | 23 vo |
| Ethylbenzene | mg/kg (ppm) | 1 | <0.05 | 59 | 48 | 32-137 | 21 vo |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | <0.05 | 69 | 52 | 31-143 | 28 vo |
| m,p-Xylene | mg/kg (ppm) | 2 | <0.1 | 60 | 49 | 34-136 | 20 |
| o-Xylene | mg/kg (ppm) | 1 | <0.05 | 63 | 48 | 33-134 | 27 vo |
| Styrene | mg/kg (ppm) | 1 | <0.05 | 65 | 51 | 35-137 | 24 vo |
| Isopropylbenzene | mg/kg (ppm) | 1 | <0.05 | 59 | 46 | 31-142 | 25 vo |
| Bromoform | mg/kg (ppm) | 1 | <0.05 | 76 | 59 | 21-156 | 25 vo |
| n-Propylbenzene | mg/kg (ppm) | 1 | <0.05 | 57 | 46 | 23-146 | 21 vo |
| Bromobenzene | mg/kg (ppm) | 1 | <0.05 | 66 | 55 | 34-130 | 18 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | 0.048 | 52 | 42 | 18-149 | 21 vo |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | <0.05 | 109 | 81 | 28-140 | 29 vo |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | <0.05 | 69 | 56 | 25-144 | 21 vo |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | <0.05 | 62 | 49 | 31-134 | 23 vo |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | <0.05 | 61 | 50 | 31-136 | 20 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | <0.05 | 57 | 47 | 30-137 | 19 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | 0.080 | 52 | 41 | 10-182 | 24 vo |
| sec-Butylbenzene | mg/kg (ppm) | 1 | 0.17 | 52 | 37 | 23-145 | 34 vo |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | 0.15 | 52 | 38 | 21-149 | 31 vo |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 63 | 51 | 30-131 | 21 vo |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 64 | 51 | 29-129 | 23 vo |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 66 | 53 | 31-132 | 22 vo |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | <0.5 | 63 | 54 | 11-161 | 15 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | <0.25 | 65 | 50 | 22-142 | 26 vo |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | <0.25 | 61 | 46 | 10-142 | 28 vo |
| Naphthalene | mg/kg (ppm) | 1 | <0.05 | 76 | 59 | 14-157 | 25 vo |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | <0.25 | 66 | 51 | 20-144 | 26 vo |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | 56 | 10-146 |
| Chloromethane | mg/kg (ppm) | 1 | 65 | 27-133 |
| Vinyl chloride | mg/kg (ppm) | 1 | 77 | 22-139 |
| Bromomethane | mg/kg (ppm) | 1 | 106 | 38-114 |
| Chloroethane | mg/kg (ppm) | 1 | 88 | 9-163 |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | 91 | 10-196 |
| Acetone | mg/kg (ppm) | 5 | 86 | 52-141 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | 84 | 47-128 |
| Hexane | mg/kg (ppm) | 1 | 93 | 43-142 |
| Methylene chloride | mg/kg (ppm) | 1 | 79 | 10-184 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | 80 | 60-123 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | 84 | 67-129 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | 80 | 68-115 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | 115 | 52-170 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | 86 | 72-127 |
| Chloroform | mg/kg (ppm) | 1 | 67 | 66-120 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | 85 | 30-197 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | 81 | 56-135 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | 86 | 62-131 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | 81 | 69-128 |
| Carbon tetrachloride | mg/kg (ppm) | 1 | 86 | 60-139 |
| Benzene | mg/kg (ppm) | 1 | 86 | 71-118 |
| Trichloroethene | mg/kg (ppm) | 1 | 77 | 63-121 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | 82 | 72-127 |
| Bromodichloromethane | mg/kg (ppm) | 1 | 81 | 57-126 |
| Dibromomethane | mg/kg (ppm) | 1 | 87 | 62-123 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | 87 | 45-145 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | 88 | 67-122 |
| Toluene | mg/kg (ppm) | 1 | 91 | 66-126 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | 88 | 72-132 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | 93 | 64-115 |
| 2-Hexanone | mg/kg (ppm) | 5 | 90 | 33-152 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | 88 | 72-130 |
| Tetrachloroethene | mg/kg (ppm) | 1 | 91 | 72-114 |
| Dibromochloromethane | mg/kg (ppm) | 1 | 94 | 55-121 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | 91 | 74-132 |
| Chlorobenzene | mg/kg (ppm) | 1 | 93 | 76-111 |
| Ethylbenzene | mg/kg (ppm) | 1 | 89 | 64-123 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | 88 | 64-121 |
| m,p-Xylene | mg/kg (ppm) | 2 | 91 | 78-122 |
| o-Xylene | mg/kg (ppm) | 1 | 87 | 77-124 |
| Styrene | mg/kg (ppm) | 1 | 89 | 74-126 |
| Isopropylbenzene | mg/kg (ppm) | 1 | 89 | 76-127 |
| Bromoform | mg/kg (ppm) | 1 | 97 | 56-132 |
| n-Propylbenzene | mg/kg (ppm) | 1 | 94 | 74-124 |
| Bromobenzene | mg/kg (ppm) | 1 | 94 | 72-122 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | 89 | 76-126 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | 105 | 56-143 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | 93 | 61-137 |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | 92 | 74-121 |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | 91 | 75-122 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | 94 | 73-130 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | 89 | 76-125 |
| sec-Butylbenzene | mg/kg (ppm) | 1 | 93 | 71-130 |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | 94 | 70-132 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | 93 | 75-121 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | 94 | 74-117 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | 92 | 76-121 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | 83 | 58-138 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | 91 | 64-135 |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | 95 | 50-153 |
| Naphthalene | mg/kg (ppm) | 1 | 87 | 63-140 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | 91 | 63-138 |

Date of Report: 07/21/22
Date Received: 06/28/22
Project: Kosmos 0202832.001, F&BI 206500

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 62 | 61 | 58-108 | 2 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 69 | 68 | 67-108 | 1 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 70 | 69 | 66-107 | 1 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 83 | 82 | 70-130 | 1 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 80 | 80 | 66-112 | 0 |
| Fluorene | mg/kg (ppm) | 0.83 | 84 | 85 | 67-117 | 1 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 86 | 93 | 70-130 | 8 |
| Anthracene | mg/kg (ppm) | 0.83 | 85 | 92 | 70-130 | 8 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 92 | 101 | 70-130 | 9 |
| Pyrene | mg/kg (ppm) | 0.83 | 92 | 93 | 70-130 | 1 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 95 | 99 | 70-130 | 4 |
| Chrysene | mg/kg (ppm) | 0.83 | 91 | 95 | 70-130 | 4 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 89 | 96 | 68-120 | 8 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 90 | 97 | 69-125 | 7 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 93 | 99 | 70-130 | 6 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 97 | 107 | 67-129 | 10 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 98 | 106 | 67-128 | 8 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 95 | 103 | 64-127 | 8 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

206500

# SAMPLE CHAIN OF CUSTODY

06-28-22

Page # 1 of 2 COC/CT3 USAT

Report To Angie Goodwin

Company Haley & Aldrich

Address

City, State, ZIP

Phone , Email

SAMPLERS (*signature*)

| PROJECT NAME | PO # |
|---|---|
| Lamos | 0202832-001 |
| REMARKS | INVOICE TO |
| Project specific RLs? - Yes / No | |

**TURNAROUND TIME**
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH | VPH | Tot. Metals (12) | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | Metals = |
| MW-45-51 | 01 A-R | 6/27/22 | 1145 | Soil | 5 | X | X | X | | | | | | | | | As, Ba, Cd, Cr, |
| MW-45-52 | 02 | | 1150 | | | X | X | | | X | X | | X | X | X | | Cu, Pb, Hg, Ni |
| MW-45-53 | 03 | | 1200 | | | X | X | X | | | | | | | | | Se, Ag, Zn |
| MW-45-54 | 04 | | 1225 | | | X | X | | | X | X | | X | X | X | | Cr VI |
| MW-35-51 | 05 | | 1345 | | | X | X | | | X | X | | X | X | X | | per AG 7/5/22 |
| MW-35-52 | 06 | | 1350 | | | X | X | | | X | X | | X | X | X | | MG |
| MW-35-53 | 07 | | 1405 | | | X | X | | | X | X | | X | X | X | | |
| MW-35-5200 | 08 | | 1400 | | | X | X | | | X | X | | X | X | X | | |
| MW-35-54 | 09 | ↓ | 1415 | ↓ | ↓ | X | X | X | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

ANALYSES REQUESTED

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Michael Z. McEntire | Haley and Aldrich | 6/28/22 | 1634 |
| Received by: | Liz Webber-Bruya | F:B | 6/28/22 | 1634 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

206500

# SAMPLE CHAIN OF CUSTODY

06-28-22

COC/VSAM

Page # 2 of 2

Report To A. goodwin

Company H2A

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

| PROJECT NAME | PO # |
|---|---|
| Kosmos | 0202832-001 |
| REMARKS | INVOICE TO |
| Project specific RLs? - Yes / No | |

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH | VPH | Tot Metals (12) | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-25-51 | 10A-F | 6/27/22 | 1520 | Soil | 5 | X | X | X | | | | | | | | | |
| MW-25-52 | 11 | " | 1530 | " | " | X | X | | | X | X | | X | X | X | | |
| MW-25-53 | 12 | " | 1600 | " | " | X | X | | | X | X | | X | X | X | | |
| MW-25-54 | 13 | " | 1610 | " | " | X | X | X | | | | | | | | | |
| Mw-25-54MS | | | | | | | | | | | | | | | | | |
| MW-15-51 | 14 | " | 1710 | " | " | X | X | X | | | | | | | | | |
| MW-15-52 | 15 | " | 1715 | " | " | X | X | | | X | X | | X | X | X | | |
| MW-15-53 | 16 | " | 1725 | " | " | X | X | | | X | X | | X | X | X | | |
| MW-15-54 | 17 | " | 1735 | " | " | X | X | X | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Michael J. McBride | Ahlers and Ahlers | 6/28/22 | 1634 |
| Received by: | Liz Webber-Bruya | F?B | 6/28/22 | 1634 |
| Relinquished by: | | | | 1634 |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 14, 2022

Michael Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029

Re: Analytical Data for Project 206500
Laboratory Reference No. 2207-016

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on July 5, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**Case Narrative**

Samples were collected on June 27, 2022 and received by the laboratory on July 5, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-4S-S2** | | | | | |
| Laboratory ID: | 07-016-01 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 0.051 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 0.051 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 0.051 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 0.051 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 0.051 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *118* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-4S-S4** | | | | | |
| Laboratory ID: | 07-016-02 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *106* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-3S-S1** | | | | | |
| Laboratory ID: | 07-016-03 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-11-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-11-22 | |
| Aliphatic C8-C10 | **5.8** | 5.0 | NWTPH-VPH | 7-6-22 | 7-11-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-11-22 | |
| Total Aliphatic: | **5.8** | | NWTPH-VPH | 7-6-22 | 7-11-22 | |
| Aromatic C8-C10 | **5.4** | 5.0 | NWTPH-VPH | 7-6-22 | 7-11-22 | |
| Aromatic C10-C12 | **18** | 5.0 | NWTPH-VPH | 7-6-22 | 7-11-22 | |
| Aromatic C12-C13 | **140** | 5.0 | NWTPH-VPH | 7-6-22 | 7-11-22 | |
| Total Aromatic: | **160** | | NWTPH-VPH | 7-6-22 | 7-11-22 | |
| Methyl t-butyl ether | **ND** | 0.059 | EPA 8021B | 7-6-22 | 7-11-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-11-22 | |
| Toluene | **ND** | 0.059 | EPA 8021B | 7-6-22 | 7-11-22 | |
| Ethylbenzene | **ND** | 0.059 | EPA 8021B | 7-6-22 | 7-11-22 | |
| m,p-Xylene | **ND** | 0.059 | EPA 8021B | 7-6-22 | 7-11-22 | |
| o-Xylene | **ND** | 0.059 | EPA 8021B | 7-6-22 | 7-11-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *81* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-3S-S2** | | | | | |
| Laboratory ID: | 07-016-04 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **6.7** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **74** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **81** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 0.060 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 0.060 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 0.060 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 0.060 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 0.060 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *107* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-3S-S3** | | | | | |
| Laboratory ID: | 07-016-05 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *115* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-3S-S200** | | | | | |
| Laboratory ID: | 07-016-06 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **24** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **27** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **51** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **20** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **73** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **470** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **560** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 0.051 | EPA 8021B | 7-6-22 | 7-11-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-11-22 | |
| Toluene | **ND** | 0.051 | EPA 8021B | 7-6-22 | 7-11-22 | |
| Ethylbenzene | **0.11** | 0.051 | EPA 8021B | 7-6-22 | 7-11-22 | |
| m,p-Xylene | **0.17** | 0.051 | EPA 8021B | 7-6-22 | 7-11-22 | |
| o-Xylene | **ND** | 0.051 | EPA 8021B | 7-6-22 | 7-11-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *89* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-2S-S2** | | | | | |
| Laboratory ID: | 07-016-07 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *110* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-2S-S3** | | | | | |
| Laboratory ID: | 07-016-08 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *101* | *69-130* | | | | |



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Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-1S-S2** | | | | | |
| Laboratory ID: | 07-016-09 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *111* | *69-130* | | | | |



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Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-1S-S3** | | | | | |
| Laboratory ID: | 07-016-10 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *96* | *69-130* | | | | |



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Date of Report: July 14, 2022
Samples Submitted: July 5, 2022
Laboratory Reference: 2207-016
Project: 206500

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**
**QUALITY CONTROL**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB07016S2 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *94* | *69-130* | | | | |

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPIKE BLANKS** | | | | | | | | | | | |
| Laboratory ID: | SB0706S1 | | | | | | | | | | |
| | SB | SBD | SB | SBD | | SB | SBD | | | | |
| Benzene | **0.968** | **0.995** | 1.00 | 1.00 | | **97** | **100** | 70-112 | 3 | 10 | |
| Toluene | **1.00** | **1.04** | 1.00 | 1.00 | | **100** | **104** | 70-114 | 4 | 10 | |
| Ethylbenzene | **0.977** | **1.01** | 1.00 | 1.00 | | **98** | **101** | 70-115 | 3 | 10 | |
| m,p-Xylene | **0.980** | **1.01** | 1.00 | 1.00 | | **98** | **101** | 70-117 | 3 | 11 | |
| o-Xylene | **0.990** | **1.02** | 1.00 | 1.00 | | **99** | **102** | 71-115 | 3 | 11 | |
| *Surrogate:* | | | | | | | | | | | |
| *Fluorobenzene* | | | | | | *93* | *95* | *69-130* | | | |



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OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

07-016

Page # 1 of 1

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER: Onsite
PROJECT NAME/NO.: 206500
PO #: C-251
REMARKS:

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-4S-S2 | 1 | 6/27/22 | 1150 | soil | 1 | | | ✓ | | | | | | | LIMITED SAMPLE |
| MW-4S-S4 | 2 | ↑ | 1225 | ↑ | ↓ | | | ✓ | | | | | | | * will email |
| MW-3S-S1 | 3 | | 1345 | | | | | ✓ | | | | | | | % SOLIDS INFO |
| MW-3S-S2 | 4 | | 1350 | | | | | ✓ | | | | | | | ↓ |
| MW-3S-S3 | 5 | | 1405 | | | | | ✓ | | | | | | | ¥/S |
| MW-3S-S200 | 6 | | 1400 | | | | | ✓ | | | | | | | |
| MW-2S-S2 | 7 | | 1530 | | | | | ✓ | | | | | | | |
| MW-2S-S3 | 8 | | 1600 | | | | | ✓ | | | | | | | |
| MW-1S-S2 | 9 | ↓ | 1715 | ↓ | | | | ✓ | | | | | | | |
| MW-1S-S3 | 10 | 6/27/22 | 1715 | soil | ↓ | | | ✓ | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |


*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*


| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | | |
| Received by: | Nichelle Shri | N. Biffin | OSE | 7/5/22 | 1425 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 206500**
**Work Order Number: 2207039**

July 19, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 10 sample(s) on 7/5/2022 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***
***Hexavalent Chromium by EPA Method 7196***
***Sample Moisture (Percent Moisture)***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *07/19/2022*

**CLIENT:** Friedman & Bruya
**Project:** 206500
**Work Order:** 2207039

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2207039-001 | MW-4S-S2 | 06/27/2022 11:50 AM | 07/05/2022 2:49 PM |
| 2207039-002 | MW-4S-S4 | 06/27/2022 12:25 PM | 07/05/2022 2:49 PM |
| 2207039-003 | MW-3S-S1 | 06/27/2022 1:45 PM | 07/05/2022 2:49 PM |
| 2207039-004 | MW-3S-S2 | 06/27/2022 1:50 AM | 07/05/2022 2:49 PM |
| 2207039-005 | MW-3S-S3 | 06/27/2022 2:05 PM | 07/05/2022 2:49 PM |
| 2207039-006 | MW-3S-S200 | 06/27/2022 2:00 PM | 07/05/2022 2:49 PM |
| 2207039-007 | MW-2S-S2 | 06/27/2022 3:30 PM | 07/05/2022 2:49 PM |
| 2207039-008 | MW-2S-S3 | 06/27/2022 4:00 PM | 07/05/2022 2:49 PM |
| 2207039-009 | MW-1S-S2 | 06/27/2022 5:15 PM | 07/05/2022 2:49 PM |
| 2207039-010 | MW-1S-S3 | 06/27/2022 5:15 PM | 07/05/2022 2:49 PM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

# Case Narrative

WO#: **2207039**
Date: **7/19/2022**

**CLIENT:** Friedman & Bruya
**Project:** 206500

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2207039**
Date Reported: **7/19/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/27/2022 11:50:00 AM
**Project:** 206500
**Lab ID:** 2207039-001
**Matrix:** Soil
**Client Sample ID:** **MW-4S-S2**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37060 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 26.0 | | mg/Kg-dry | 1 | 7/15/2022 5:36:14 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 13.0 | | mg/Kg-dry | 1 | 7/15/2022 5:36:14 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 13.0 | | mg/Kg-dry | 1 | 7/15/2022 5:36:14 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.0 | | mg/Kg-dry | 1 | 7/15/2022 5:36:14 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 13.0 | | mg/Kg-dry | 1 | 7/15/2022 5:36:14 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 26.0 | | mg/Kg-dry | 1 | 7/15/2022 11:24:53 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.0 | | mg/Kg-dry | 1 | 7/15/2022 11:24:53 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.0 | | mg/Kg-dry | 1 | 7/15/2022 11:24:53 PM |
| Aromatic Hydrocarbon (C16-C21) | 15.8 | 13.0 | | mg/Kg-dry | 1 | 7/15/2022 11:24:53 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.0 | | mg/Kg-dry | 1 | 7/15/2022 11:24:53 PM |
| Surr: 1-Chlorooctadecane | 71.4 | 50 - 150 | | %Rec | 1 | 7/15/2022 5:36:14 PM |
| Surr: o-Terphenyl | 75.4 | 50 - 150 | | %Rec | 1 | 7/15/2022 11:24:53 PM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R76702 | | Analyst: AP |
| Percent Moisture | 26.5 | 0.500 | | wt% | 1 | 7/8/2022 11:23:46 AM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 37053 | | Analyst: SS |
| Chromium, Hexavalent | 1.71 | 0.680 | | mg/Kg-dry | 1 | 7/8/2022 12:05:00 PM |

# Analytical Report

Work Order: **2207039**
Date Reported: **7/19/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/27/2022 12:25:00 PM
**Project:** 206500
**Lab ID:** 2207039-002
**Matrix:** Soil
**Client Sample ID:** **MW-4S-S4**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37060 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 21.9 | | mg/Kg-dry | 1 | 7/15/2022 6:19:49 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 10.9 | | mg/Kg-dry | 1 | 7/15/2022 6:19:49 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.9 | | mg/Kg-dry | 1 | 7/15/2022 6:19:49 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.9 | | mg/Kg-dry | 1 | 7/15/2022 6:19:49 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.9 | | mg/Kg-dry | 1 | 7/15/2022 6:19:49 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 21.9 | | mg/Kg-dry | 1 | 7/16/2022 12:08:22 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.9 | | mg/Kg-dry | 1 | 7/16/2022 12:08:22 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.9 | | mg/Kg-dry | 1 | 7/16/2022 12:08:22 AM |
| Aromatic Hydrocarbon (C16-C21) | 14.6 | 10.9 | | mg/Kg-dry | 1 | 7/16/2022 12:08:22 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.9 | | mg/Kg-dry | 1 | 7/16/2022 12:08:22 AM |
| Surr: 1-Chlorooctadecane | 69.4 | 50 - 150 | | %Rec | 1 | 7/15/2022 6:19:49 PM |
| Surr: o-Terphenyl | 86.7 | 50 - 150 | | %Rec | 1 | 7/16/2022 12:08:22 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R76702 | | Analyst: AP |
| Percent Moisture | 10.8 | 0.500 | | wt% | 1 | 7/8/2022 11:23:46 AM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 37053 | | Analyst: SS |
| Chromium, Hexavalent | 1.18 | 0.556 | | mg/Kg-dry | 1 | 7/8/2022 12:09:00 PM |

# Analytical Report

Work Order: **2207039**
Date Reported: **7/19/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/27/2022 1:45:00 PM
**Project:** 206500
**Lab ID:** 2207039-003
**Matrix:** Soil
**Client Sample ID:** **MW-3S-S1**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37060 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 30.9 | | mg/Kg-dry | 1 | 7/15/2022 6:41:34 PM |
| Aliphatic Hydrocarbon (C10-C12) | 76.2 | 15.5 | | mg/Kg-dry | 1 | 7/15/2022 6:41:34 PM |
| Aliphatic Hydrocarbon (C12-C16) | 274 | 15.5 | | mg/Kg-dry | 1 | 7/15/2022 6:41:34 PM |
| Aliphatic Hydrocarbon (C16-C21) | 271 | 15.5 | | mg/Kg-dry | 1 | 7/15/2022 6:41:34 PM |
| Aliphatic Hydrocarbon (C21-C34) | 53.9 | 15.5 | | mg/Kg-dry | 1 | 7/15/2022 6:41:34 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 30.9 | | mg/Kg-dry | 1 | 7/16/2022 12:30:06 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 15.5 | | mg/Kg-dry | 1 | 7/16/2022 12:30:06 AM |
| Aromatic Hydrocarbon (C12-C16) | 78.4 | 15.5 | | mg/Kg-dry | 1 | 7/16/2022 12:30:06 AM |
| Aromatic Hydrocarbon (C16-C21) | 237 | 15.5 | | mg/Kg-dry | 1 | 7/16/2022 12:30:06 AM |
| Aromatic Hydrocarbon (C21-C34) | 57.3 | 15.5 | | mg/Kg-dry | 1 | 7/16/2022 12:30:06 AM |
| Surr: 1-Chlorooctadecane | 61.6 | 50 - 150 | | %Rec | 1 | 7/15/2022 6:41:34 PM |
| Surr: o-Terphenyl | 79.6 | 50 - 150 | | %Rec | 1 | 7/16/2022 12:30:06 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R76702 | | Analyst: AP |
| Percent Moisture | 35.9 | 0.500 | | wt% | 1 | 7/8/2022 11:23:46 AM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 37053 | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.776 | | mg/Kg-dry | 1 | 7/8/2022 12:13:00 PM |

# Analytical Report

Work Order: **2207039**
Date Reported: **7/19/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/27/2022 1:50:00 AM
**Project:** 206500
**Lab ID:** 2207039-004
**Matrix:** Soil
**Client Sample ID:** **MW-3S-S2**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37060 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | 31.7 | 26.8 | | mg/Kg-dry | 1 | 7/15/2022 7:03:31 PM |
| Aliphatic Hydrocarbon (C10-C12) | 107 | 13.4 | | mg/Kg-dry | 1 | 7/15/2022 7:03:31 PM |
| Aliphatic Hydrocarbon (C12-C16) | 405 | 13.4 | | mg/Kg-dry | 1 | 7/15/2022 7:03:31 PM |
| Aliphatic Hydrocarbon (C16-C21) | 275 | 13.4 | | mg/Kg-dry | 1 | 7/15/2022 7:03:31 PM |
| Aliphatic Hydrocarbon (C21-C34) | 55.2 | 13.4 | | mg/Kg-dry | 1 | 7/15/2022 7:03:31 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 26.8 | | mg/Kg-dry | 1 | 7/16/2022 12:51:45 AM |
| Aromatic Hydrocarbon (C10-C12) | 17.1 | 13.4 | | mg/Kg-dry | 1 | 7/16/2022 12:51:45 AM |
| Aromatic Hydrocarbon (C12-C16) | 140 | 13.4 | | mg/Kg-dry | 1 | 7/16/2022 12:51:45 AM |
| Aromatic Hydrocarbon (C16-C21) | 302 | 13.4 | | mg/Kg-dry | 1 | 7/16/2022 12:51:45 AM |
| Aromatic Hydrocarbon (C21-C34) | 40.9 | 13.4 | | mg/Kg-dry | 1 | 7/16/2022 12:51:45 AM |
| Surr: 1-Chlorooctadecane | 79.7 | 50 - 150 | | %Rec | 1 | 7/15/2022 7:03:31 PM |
| Surr: o-Terphenyl | 81.4 | 50 - 150 | | %Rec | 1 | 7/16/2022 12:51:45 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R76702 | | Analyst: AP |
| Percent Moisture | 28.3 | 0.500 | | wt% | 1 | 7/8/2022 11:23:46 AM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 37053 | | Analyst: SS |
| Chromium, Hexavalent | 1.34 | 0.694 | | mg/Kg-dry | 1 | 7/8/2022 12:17:00 PM |

# Analytical Report

Work Order: **2207039**
Date Reported: **7/19/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/27/2022 2:05:00 PM
**Project:** 206500
**Lab ID:** 2207039-005
**Matrix:** Soil
**Client Sample ID:** **MW-3S-S3**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37060 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 21.6 | | mg/Kg-dry | 1 | 7/18/2022 2:27:12 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 10.8 | | mg/Kg-dry | 1 | 7/18/2022 2:27:12 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.8 | | mg/Kg-dry | 1 | 7/18/2022 2:27:12 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.8 | | mg/Kg-dry | 1 | 7/18/2022 2:27:12 PM |
| Aliphatic Hydrocarbon (C21-C34) | 140 | 10.8 | | mg/Kg-dry | 1 | 7/18/2022 2:27:12 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 21.6 | | mg/Kg-dry | 1 | 7/16/2022 1:13:22 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.8 | | mg/Kg-dry | 1 | 7/16/2022 1:13:22 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.8 | | mg/Kg-dry | 1 | 7/16/2022 1:13:22 AM |
| Aromatic Hydrocarbon (C16-C21) | 11.9 | 10.8 | | mg/Kg-dry | 1 | 7/16/2022 1:13:22 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.8 | | mg/Kg-dry | 1 | 7/16/2022 1:13:22 AM |
| Surr: 1-Chlorooctadecane | 53.5 | 50 - 150 | | %Rec | 1 | 7/18/2022 2:27:12 PM |
| Surr: o-Terphenyl | 52.6 | 50 - 150 | | %Rec | 1 | 7/16/2022 1:13:22 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R76702 | | Analyst: AP |
| Percent Moisture | 15.8 | 0.500 | | wt% | 1 | 7/8/2022 11:23:46 AM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 37053 | | Analyst: SS |
| Chromium, Hexavalent | 5.12 | 1.75 | D | mg/Kg-dry | 3 | 7/8/2022 12:28:00 PM |

# Analytical Report

Work Order: **2207039**
Date Reported: **7/19/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/27/2022 2:00:00 PM
**Project:** 206500
**Lab ID:** 2207039-006
**Matrix:** Soil
**Client Sample ID:** **MW-3S-S200**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37060 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 26.5 | | mg/Kg-dry | 1 | 7/15/2022 7:46:57 PM |
| Aliphatic Hydrocarbon (C10-C12) | 68.6 | 13.3 | | mg/Kg-dry | 1 | 7/15/2022 7:46:57 PM |
| Aliphatic Hydrocarbon (C12-C16) | 292 | 13.3 | | mg/Kg-dry | 1 | 7/15/2022 7:46:57 PM |
| Aliphatic Hydrocarbon (C16-C21) | 267 | 13.3 | | mg/Kg-dry | 1 | 7/15/2022 7:46:57 PM |
| Aliphatic Hydrocarbon (C21-C34) | 40.9 | 13.3 | | mg/Kg-dry | 1 | 7/15/2022 7:46:57 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 26.5 | | mg/Kg-dry | 1 | 7/16/2022 1:35:06 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.3 | | mg/Kg-dry | 1 | 7/16/2022 1:35:06 AM |
| Aromatic Hydrocarbon (C12-C16) | 86.3 | 13.3 | | mg/Kg-dry | 1 | 7/16/2022 1:35:06 AM |
| Aromatic Hydrocarbon (C16-C21) | 229 | 13.3 | | mg/Kg-dry | 1 | 7/16/2022 1:35:06 AM |
| Aromatic Hydrocarbon (C21-C34) | 34.6 | 13.3 | | mg/Kg-dry | 1 | 7/16/2022 1:35:06 AM |
| Surr: 1-Chlorooctadecane | 72.6 | 50 - 150 | | %Rec | 1 | 7/15/2022 7:46:57 PM |
| Surr: o-Terphenyl | 84.6 | 50 - 150 | | %Rec | 1 | 7/16/2022 1:35:06 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R76702 | | Analyst: AP |
| Percent Moisture | 25.1 | 0.500 | | wt% | 1 | 7/8/2022 11:23:46 AM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 37053 | | Analyst: SS |
| Chromium, Hexavalent | 3.19 | 0.662 | | mg/Kg-dry | 1 | 7/8/2022 12:32:00 PM |

# Analytical Report

Work Order: **2207039**
Date Reported: **7/19/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/27/2022 3:30:00 PM
**Project:** 206500
**Lab ID:** 2207039-007
**Matrix:** Soil
**Client Sample ID:** **MW-2S-S2**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37060 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 25.8 | | mg/Kg-dry | 1 | 7/15/2022 8:08:52 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 12.9 | | mg/Kg-dry | 1 | 7/15/2022 8:08:52 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 12.9 | | mg/Kg-dry | 1 | 7/15/2022 8:08:52 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 12.9 | | mg/Kg-dry | 1 | 7/15/2022 8:08:52 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 12.9 | | mg/Kg-dry | 1 | 7/15/2022 8:08:52 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 25.8 | | mg/Kg-dry | 1 | 7/16/2022 1:56:43 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 12.9 | | mg/Kg-dry | 1 | 7/16/2022 1:56:43 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 12.9 | | mg/Kg-dry | 1 | 7/16/2022 1:56:43 AM |
| Aromatic Hydrocarbon (C16-C21) | 21.0 | 12.9 | | mg/Kg-dry | 1 | 7/16/2022 1:56:43 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 12.9 | | mg/Kg-dry | 1 | 7/16/2022 1:56:43 AM |
| Surr: 1-Chlorooctadecane | 72.3 | 50 - 150 | | %Rec | 1 | 7/15/2022 8:08:52 PM |
| Surr: o-Terphenyl | 99.0 | 50 - 150 | | %Rec | 1 | 7/16/2022 1:56:43 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R76702 | | Analyst: AP |
| Percent Moisture | 28.4 | 0.500 | | wt% | 1 | 7/8/2022 11:23:46 AM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 37053 | | Analyst: SS |
| Chromium, Hexavalent | 1.12 | 0.690 | | mg/Kg-dry | 1 | 7/8/2022 12:57:00 PM |

# Analytical Report

Work Order: **2207039**
Date Reported: **7/19/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/27/2022 4:00:00 PM
**Project:** 206500
**Lab ID:** 2207039-008
**Matrix:** Soil
**Client Sample ID:** **MW-2S-S3**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37060 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 21.9 | | mg/Kg-dry | 1 | 7/15/2022 8:30:39 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 11.0 | | mg/Kg-dry | 1 | 7/15/2022 8:30:39 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 11.0 | | mg/Kg-dry | 1 | 7/15/2022 8:30:39 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 11.0 | | mg/Kg-dry | 1 | 7/15/2022 8:30:39 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 11.0 | | mg/Kg-dry | 1 | 7/15/2022 8:30:39 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 21.9 | | mg/Kg-dry | 1 | 7/16/2022 2:18:22 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 11.0 | | mg/Kg-dry | 1 | 7/16/2022 2:18:22 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 11.0 | | mg/Kg-dry | 1 | 7/16/2022 2:18:22 AM |
| Aromatic Hydrocarbon (C16-C21) | 13.9 | 11.0 | | mg/Kg-dry | 1 | 7/16/2022 2:18:22 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 11.0 | | mg/Kg-dry | 1 | 7/16/2022 2:18:22 AM |
| Surr: 1-Chlorooctadecane | 69.3 | 50 - 150 | | %Rec | 1 | 7/15/2022 8:30:39 PM |
| Surr: o-Terphenyl | 92.3 | 50 - 150 | | %Rec | 1 | 7/16/2022 2:18:22 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R76702 | | Analyst: AP |
| Percent Moisture | 11.7 | 0.500 | | wt% | 1 | 7/8/2022 11:23:46 AM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 37053 | | Analyst: SS |
| Chromium, Hexavalent | 2.15 | 0.557 | | mg/Kg-dry | 1 | 7/8/2022 1:00:00 PM |

# Analytical Report

Work Order: **2207039**
Date Reported: **7/19/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/27/2022 5:15:00 PM
**Project:** 206500
**Lab ID:** 2207039-009
**Matrix:** Soil
**Client Sample ID:** **MW-1S-S2**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37060 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 23.1 | | mg/Kg-dry | 1 | 7/15/2022 8:52:24 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 11.5 | | mg/Kg-dry | 1 | 7/15/2022 8:52:24 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 11.5 | | mg/Kg-dry | 1 | 7/15/2022 8:52:24 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 11.5 | | mg/Kg-dry | 1 | 7/15/2022 8:52:24 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 11.5 | | mg/Kg-dry | 1 | 7/15/2022 8:52:24 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 23.1 | | mg/Kg-dry | 1 | 7/16/2022 2:40:08 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 11.5 | | mg/Kg-dry | 1 | 7/16/2022 2:40:08 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 11.5 | | mg/Kg-dry | 1 | 7/16/2022 2:40:08 AM |
| Aromatic Hydrocarbon (C16-C21) | 15.3 | 11.5 | | mg/Kg-dry | 1 | 7/16/2022 2:40:08 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 11.5 | | mg/Kg-dry | 1 | 7/16/2022 2:40:08 AM |
| Surr: 1-Chlorooctadecane | 60.0 | 50 - 150 | | %Rec | 1 | 7/15/2022 8:52:24 PM |
| Surr: o-Terphenyl | 88.6 | 50 - 150 | | %Rec | 1 | 7/16/2022 2:40:08 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R76702 | | Analyst: AP |
| Percent Moisture | 17.1 | 0.500 | | wt% | 1 | 7/8/2022 11:23:46 AM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 37053 | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.595 | | mg/Kg-dry | 1 | 7/8/2022 1:11:00 PM |

# Analytical Report

Work Order: **2207039**
Date Reported: **7/19/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/27/2022 5:15:00 PM
**Project:** 206500
**Lab ID:** 2207039-010
**Matrix:** Soil
**Client Sample ID:** **MW-1S-S3**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37060 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 20.1 | | mg/Kg-dry | 1 | 7/18/2022 3:10:35 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 10.0 | | mg/Kg-dry | 1 | 7/18/2022 3:10:35 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.0 | | mg/Kg-dry | 1 | 7/18/2022 3:10:35 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.0 | | mg/Kg-dry | 1 | 7/18/2022 3:10:35 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.0 | | mg/Kg-dry | 1 | 7/18/2022 3:10:35 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 20.1 | | mg/Kg-dry | 1 | 7/18/2022 4:59:02 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.0 | | mg/Kg-dry | 1 | 7/18/2022 4:59:02 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.0 | | mg/Kg-dry | 1 | 7/18/2022 4:59:02 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 10.0 | | mg/Kg-dry | 1 | 7/18/2022 4:59:02 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.0 | | mg/Kg-dry | 1 | 7/18/2022 4:59:02 PM |
| Surr: 1-Chlorooctadecane | 81.2 | 50 - 150 | | %Rec | 1 | 7/18/2022 3:10:35 PM |
| Surr: o-Terphenyl | 97.5 | 50 - 150 | | %Rec | 1 | 7/18/2022 4:59:02 PM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R76702 | | Analyst: AP |
| Percent Moisture | 12.4 | 0.500 | | wt% | 1 | 7/8/2022 11:23:46 AM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 37053 | | Analyst: SS |
| Chromium, Hexavalent | 1.00 | 0.569 | | mg/Kg-dry | 1 | 7/8/2022 1:15:00 PM |

**Work Order:** 2207039
**CLIENT:** Friedman & Bruya
**Project:** 206500

# QC SUMMARY REPORT

## Hexavalent Chromium by EPA Method 7196

| Sample ID: **MB-37053** | SampType: **MBLK** | | | Units: **mg/Kg** | | Prep Date: **7/7/2022** | | | RunNo: **76741** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **37053** | | | | | Analysis Date: **7/8/2022** | | | SeqNo: **1574912** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.500 | | | | | | | | | |

| Sample ID: **LCS-37053** | SampType: **LCS** | | | Units: **mg/Kg** | | Prep Date: **7/7/2022** | | | RunNo: **76741** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **37053** | | | | | Analysis Date: **7/8/2022** | | | SeqNo: **1574913** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 2.70 | 0.500 | 2.500 | 0 | 108 | 80 | 121 | | | | |

| Sample ID: **2207027-001ADUP** | SampType: **DUP** | | | Units: **mg/Kg-dry** | | Prep Date: **7/7/2022** | | | RunNo: **76741** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **37053** | | | | | Analysis Date: **7/8/2022** | | | SeqNo: **1574915** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.535 | | | | | | 0 | | 30 | |

| Sample ID: **2207027-001AMS** | SampType: **MS** | | | Units: **mg/Kg-dry** | | Prep Date: **7/7/2022** | | | RunNo: **76741** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **37053** | | | | | Analysis Date: **7/8/2022** | | | SeqNo: **1574916** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 2.69 | 0.534 | 2.668 | 0.1417 | 95.4 | 19.5 | 157 | | | | |

| Sample ID: **2207027-001AMSD** | SampType: **MSD** | | | Units: **mg/Kg-dry** | | Prep Date: **7/7/2022** | | | RunNo: **76741** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **37053** | | | | | Analysis Date: **7/8/2022** | | | SeqNo: **1574917** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 2.81 | 0.538 | 2.691 | 0.1417 | 99.1 | 19.5 | 157 | 2.688 | 4.42 | 30 | |

**Work Order:** 2207039
**CLIENT:** Friedman & Bruya
**Project:** 206500

# QC SUMMARY REPORT

## Hexavalent Chromium by EPA Method 7196

Sample ID: **2207039-008ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/7/2022** RunNo: **76741**
Client ID: **MW-2S-S3** Batch ID: **37053** Analysis Date: **7/8/2022** SeqNo: **1574928**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 0.800 | 0.557 | | | | | | 2.150 | 91.5 | 30 | R |

**NOTES:**
R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: **2207039-008AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/7/2022** RunNo: **76741**
Client ID: **MW-2S-S3** Batch ID: **37053** Analysis Date: **7/8/2022** SeqNo: **1574929**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 3.79 | 0.562 | 2.812 | 2.150 | 58.3 | 19.5 | 157 | | | | |

**Work Order:** 2207039
**CLIENT:** Friedman & Bruya
**Project:** 206500

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-37060** SampType: **MBLK** Units: **mg/Kg** Prep Date: **7/8/2022** RunNo: **76936**
Client ID: **MBLKS** Batch ID: **37060** Analysis Date: **7/15/2022** SeqNo: **1579648**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 20.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.0 | | | | | | | | | |
| Surr: 1-Chlorooctadecane | 71.7 | | 100.0 | | 71.7 | 50 | 150 | | | | |

Sample ID: **LCS-37060** SampType: **LCS** Units: **mg/Kg** Prep Date: **7/8/2022** RunNo: **76936**
Client ID: **LCSS** Batch ID: **37060** Analysis Date: **7/15/2022** SeqNo: **1579660**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 131 | 20.0 | 250.0 | 0 | 52.3 | 15.9 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 101 | 10.0 | 125.0 | 0 | 80.5 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 109 | 10.0 | 125.0 | 0 | 87.4 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 110 | 10.0 | 125.0 | 0 | 88.1 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 106 | 10.0 | 125.0 | 0 | 84.6 | 70 | 130 | | | | |
| Surr: 1-Chlorooctadecane | 98.7 | | 100.0 | | 98.7 | 50 | 150 | | | | |

Sample ID: **2207039-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/8/2022** RunNo: **76936**
Client ID: **MW-4S-S2** Batch ID: **37060** Analysis Date: **7/15/2022** SeqNo: **1579661**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 149 | 25.6 | 319.5 | 0 | 46.6 | 5 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 113 | 12.8 | 159.7 | 0 | 70.7 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 127 | 12.8 | 159.7 | 0 | 79.7 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 127 | 12.8 | 159.7 | 0 | 79.7 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 120 | 12.8 | 159.7 | 0 | 75.1 | 70 | 130 | | | | |
| Surr: 1-Chlorooctadecane | 95.7 | | 127.8 | | 74.9 | 50 | 150 | | | | |

**Work Order:** 2207039
**CLIENT:** Friedman & Bruya
**Project:** 206500

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-37060** SampType: **MBLK** Units: **mg/Kg** Prep Date: **7/8/2022** RunNo: **76936**
Client ID: **MBLKS** Batch ID: **37060** Analysis Date: **7/15/2022** SeqNo: **1579664**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 20.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.0 | | | | | | | | | |
| Surr: o-Terphenyl | 82.0 | | 100.0 | | 82.0 | 50 | 150 | | | | |

Sample ID: **LCS-37060** SampType: **LCS** Units: **mg/Kg** Prep Date: **7/8/2022** RunNo: **76936**
Client ID: **LCSS** Batch ID: **37060** Analysis Date: **7/15/2022** SeqNo: **1579665**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 144 | 20.0 | 250.0 | 0 | 57.4 | 24 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 105 | 10.0 | 125.0 | 0 | 84.1 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 109 | 10.0 | 125.0 | 0 | 87.0 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 117 | 10.0 | 125.0 | 0 | 93.8 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 111 | 10.0 | 125.0 | 0 | 89.0 | 70 | 130 | | | | |
| Surr: o-Terphenyl | 94.7 | | 100.0 | | 94.7 | 50 | 150 | | | | |

Sample ID: **2207039-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/8/2022** RunNo: **76936**
Client ID: **MW-4S-S2** Batch ID: **37060** Analysis Date: **7/16/2022** SeqNo: **1579677**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 184 | 25.6 | 319.5 | 0 | 57.7 | 14 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 131 | 12.8 | 159.7 | 0 | 82.3 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 136 | 12.8 | 159.7 | 4.415 | 82.2 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 139 | 12.8 | 159.7 | 15.84 | 77.2 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 126 | 12.8 | 159.7 | 0 | 79.1 | 70 | 130 | | | | |
| Surr: o-Terphenyl | 106 | | 127.8 | | 83.1 | 50 | 150 | | | | |

**Work Order:** 2207039
**CLIENT:** Friedman & Bruya
**Project:** 206500

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2207039-007ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/8/2022** RunNo: **76936**
Client ID: **MW-2S-S2** Batch ID: **37060** Analysis Date: **7/18/2022** SeqNo: **1579681**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 26.3 | | | | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 13.1 | | | | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 13.1 | | | | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.1 | | | | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 13.1 | | | | | | 0 | | 25 | |
| Surr: 1-Chlorooctadecane | 92.1 | | 131.3 | | 70.2 | 50 | 150 | | 0 | | |

Sample ID: **2207039-007ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/8/2022** RunNo: **76936**
Client ID: **MW-2S-S2** Batch ID: **37060** Analysis Date: **7/18/2022** SeqNo: **1579685**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 26.3 | | | | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.1 | | | | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.1 | | | | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C16-C21) | ND | 13.1 | | | | | | 20.95 | 49.7 | 25 | |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.1 | | | | | | 0 | | 25 | |
| Surr: o-Terphenyl | 106 | | 131.3 | | 80.4 | 50 | 150 | | 0 | | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | **FB** | Work Order Number: | **2207039** |
| Logged by: | **Elisabeth Samoray** | Date Received: | **7/5/2022 2:49:00 PM** |

## *Chain of Custody*

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes | ☑ | No | ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | | | |

## *Log In*

| | | | | | | |
|---|---|---|---|---|---|---|
| 3. | Coolers are present? | Yes | ☑ | No | ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes | ☑ | No | ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes | ☐ | No | ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes | ☑ | No | ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes | ☑ | No | ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes | ☑ | No | ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes | ☑ | No | ☐ | |
| 10. | Are samples properly preserved? | Yes | ☑ | No | ☐ | |
| 11. | Was preservative added to bottles? | Yes | ☐ | No | ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes | ☐ | No | ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes | ☑ | No | ☐ | |
| 14. | Does paperwork match bottle labels? | Yes | ☑ | No | ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes | ☑ | No | ☐ | |
| 16. | Is it clear what analyses were requested? | Yes | ☑ | No | ☐ | |
| 17. | Were all holding times able to be met? | Yes | ☑ | No | ☐ | |

## *Special Handling (if applicable)*

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes | ☐ | No | ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

**Item Information**

| Item # | Temp ºC |
|---|---|
| Sample 1 | 0.0 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2207039

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER: ~~Fremont~~
PROJECT NAME/NO.: 206500
PO #: C-250
REMARKS:

Page # _____ of _____

TURNAROUND TIME
☑ Standard TAT
☐ RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL
☑ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | Dioxins/Furans | EPH | VPH | Hex Cr | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-4S-S2 | | 6/27/22 | 1150 | SOIL | 1 | | ✓ | | ✓ | | | | | | ~~LIMITED SAMPLES~~, |
| MW-4S-S4 | | | 1225 | | 1 | | ✓ | | ✓ | | | | | | ~~WILL SAMPLE~~ |
| MW-3S-S1 | | | 1345 | | 1 | | ✓ | | ✓ | | | | | | ~~% SOLIDS~~ |
| MW-3S-S2 | | | 1350 | | 1 | | ✓ | | ✓ | | | | | | ~~INFO~~ OK |
| MW-3S-S3 | | | 1405 | | 1 | | ✓ | | ✓ | | | | | | ~~4/5~~ |
| MW-3S-S200 | | | 1400 | | 1 | | ✓ | | ✓ | | | | | | 7/5 |
| MW-2S-S2 | | | 1530 | | 1 | | ✓ | | ✓ | | | | | | |
| MW-2S-S3 | | | 1600 | | 1 | | ✓ | | ✓ | | | | | | |
| MW-1S-S2 | | | 1715 | | 1 | | ✓ | | ✓ | | | | | | |
| MW-1S-S3 | | 6/27/22 | 1715 | SOIL | 1 | | ✓ | | ✓ | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |


*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*


| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | ~~Michael Erdahl~~ Ann Wroten | Friedman & Bruya | 7/5/22 | 1215 |
| Received by: Tokala C. | Tokala Christensen | Fremont | 7/5/22 | 14:49 |
| Relinquished by: | | | | |
| Received by: | | | | |

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

# Data Usability Summary Report

**Project Name: Kosmos Mill**

**Project Description: Soil Samples**

**Sample Date(s): 3 through 5 May 2022**

**Analytical Laboratory: Friedman & Bruya – Seattle, WA**

**Fremont Analytical – Seattle, WA**

**Validation Performed by: Kirkland Broadwell**

**Validation Reviewed by: Katherine Miller**

**Validation Date: 6 July 2022**

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Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the analytical results for Sample Delivery Group(s) (SDG) listed. This DUSR is organized into the following sections:

1. **Sample Delivery Group Number 205113 (Friedman & Bruya, Inc.)**
2. **Explanations**
3. **Glossary**
4. **Abbreviations**
5. **Qualifiers**

**References**

This data validation and usability assessment was performed per the guidance and requirements established by the United States Environmental Protection Agency (USEPA) using the following reference materials:

- National Functional Guidelines (NFG) for Inorganic Data Review.
- National Functional Guidelines (NFG) for Organic Data Review.
- The project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section).

Data reported in this sampling event were reported to the laboratory reporting limit (RL).

Sample data were qualified in accordance with the laboratory's standard operating procedures (SOP). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

# 1. Sample Delivery Group Number 205113 (Friedman & Bruya, Inc.)

## 1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 205113, dated 10 June 2022. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- Custody seals were not used when samples were dropped off at the laboratory or service center by the field staff, submitted to a laboratory-provided courier, or when transported between subcontracted laboratories.
- Times and labels were incorrectly labeled on the COC. Laboratory was able to resolve the issue.
- Samples were received that were not on listed on the COC. Laboratory was able to resolve the issue.
- TP-54-S2-10 label was smeared. Laboratory was able to complete required analyses for sample.
- TP-57-S2-10 did not receive "VOA." Sample listed on COC with a "no" written next to # jars. Laboratory was able to complete required analyses for sample.
- ID on label TP-59-S1-5 two VOAs labeled TP-55-S1-5. Laboratory was able to complete required analyses for sample.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Methods | Matrix |
|---|---|---|---|---|---|
| TP-16-S1-5 | N | 205113-01 | 5/3/2022 | E | SO |
| TP-16-S2-10 | N | 205113-02 | 5/3/2022 | A, D, E, F | SO |
| TP-17-S1-5 | N | 205113-03 | 5/5/2022 | E | SO |
| TP-17-S2-10 | N | 205113-04 | 5/5/2022 | A, C, D, E | SO |
| TP-17-S3-15 | N | 205113-05 | 5/5/2022 | E, F | SO |
| TP-21-S1-5 | N | 205113-06 | 5/5/2022 | E, F, G, H | SO |
| TP-21-S2-10 | N | 205113-07 | 5/5/2022 | A, B, C, D, E, F, G, H | SO |
| TP-21-S200-10 | FD | 205113-08 | 5/5/2022 | A, B, C, D, E, F, G, H | SO |
| TP-21-S3-15 | N | 205113-09 | 5/5/2022 | B, C, E, F, G, H | SO |
| TP-22-S1-5 | N | 205113-10 | 5/5/2022 | A, B, C, D, E, F, G, H | SO |
| TP-22-S2-10 | N | 205113-11 | 5/5/2022 | C, E, F | SO |
| TP-24-S1-2.5 | N | 205113-13 | 5/5/2022 | A, B, C, D, E, F, G, H | SO |
| TP-24-S100-2.5 | FD | 205113-14 | 5/5/2022 | A, B, C, D, E, F, G, H | SO |
| TP-24-S2-5 | N | 205113-15 | 5/5/2022 | B, C, E, F, G, H | SO |
| TP-24-S3-10 | N | 205113-16 | 5/5/2022 | C, E, F | SO |
| TP-25-S1-2.5 | N | 205113-18 | 5/5/2022 | B, E, F, G, H | SO |
| TP-25-S2-5 | N | 205113-19 | 5/5/2022 | A, C, D, E, F | SO |
| TP-25-S4-15 | N | 205113-21 | 5/5/2022 | C, E, F | SO |

| Sample ID | Sample Type | Lab ID | Sample Date | Methods | Matrix |
|---|---|---|---|---|---|
| TP-26-S1-2.5 | N | 205113-22 | 5/5/2022 | B, C, E, F, G, H | SO |
| TP-26-S2-5 | N | 205113-23 | 5/5/2022 | A, C, D, E, F | SO |
| TP-28-S1-5 | N | 205113-26 | 5/5/2022 | A, C, D, E, F | SO |
| TP-28-S2-10 | N | 205113-27 | 5/5/2022 | E | SO |
| TP-30-S1-5 | N | 205113-28 | 5/5/2022 | A, C, D, E, F | SO |
| TP-30-S2-10 | N | 205113-29 | 5/3/2022 | E | SO |
| TP-31-S1-2.5 | N | 205113-30 | 5/3/2022 | A, C, D, E | SO |
| TP-31-S2-5 | N | 205113-31 | 5/3/2022 | E | SO |
| TP-32-S1-2.5 | N | 205113-32 | 5/3/2022 | A, C, D, E | SO |
| TP-32-S2-5 | N | 205113-33 | 5/3/2022 | E | SO |
| TP-33-S1-2.5 | N | 205113-34 | 5/3/2022 | A, C, D, E, F | SO |
| TP-33-S2-5 | N | 205113-35 | 5/3/2022 | E | SO |
| TP-34-S1-2.5 | N | 205113-36 | 5/3/2022 | A, B, C, D, E, F, G, H | SO |
| TP-34-S2-5 | N | 205113-37 | 5/3/2022 | B, C, E, F | SO |
| TP-35-S1-5 | N | 205113-39 | 5/3/2022 | E | SO |
| TP-35-S2-10 | N | 205113-40 | 5/3/2022 | E | SO |
| TP-36-S1-3.5 | N | 205113-41 | 5/2/2022 | A, B, C, D, E, F, G, H | SO |
| TP-36-S2-10.5 | N | 205113-42 | 5/2/2022 | C, E, F | SO |
| TP-36B-S1-5 | N | 205113-43 | 5/3/2022 | A, B, C, D, E, F | SO |
| TP-36B-S2-10 | N | 205113-44 | 5/3/2022 | E | SO |
| TP-37-S1-2.5 | N | 205113-45 | 5/3/2022 | A, C, D, E, F | SO |
| TP-37-S2-5 | N | 205113-46 | 5/2/2022 | E | SO |
| TP-39-S1-2.5 | N | 205113-47 | 5/2/2022 | A, C, D, E, F | SO |
| TP-39-S2-5 | N | 205113-48 | 5/2/2022 | E | SO |
| TP-40-S1-5 | N | 205113-49 | 5/2/2022 | A, C, D, E, F | SO |
| TP-40-S2-10 | N | 205113-50 | 5/2/2022 | E | SO |
| TP-41-S1-5 | N | 205113-51 | 5/2/2022 | A, C, D, E, F | SO |
| TP-41-S2-10 | N | 205113-52 | 5/2/2022 | E | SO |
| TP-43-S2-7.5 | N | 205113-54 | 5/3/2022 | E, F, G, H | SO |
| TP-43-S2-7.5B | FD | 205113-55 | 5/3/2022 | A, C, D, E, F | SO |
| TP-43-S3-10 | N | 205113-56 | 5/3/2022 | A, B, C, D, E | SO |
| TP-43-S3-1000 | FD | 205113-57 | 5/3/2022 | A, B, C, D, E | SO |
| TP-43-S4-14 | N | 205113-58 | 5/3/2022 | A, B, C, D, E, F, G, H | SO |
| TP-44-S1-5 | N | 205113-59 | 5/3/2022 | E, F, G, H | SO |
| TP-44-S2-10 | N | 205113-60 | 5/3/2022 | A, B, C, D, E, F, G, H | SO |
| TP-44-S3-15 | N | 205113-61 | 5/3/2022 | B, C, E, F | SO |
| TP-46-S1-5 | N | 205113-62 | 5/2/2022 | A, C, D, E, F | SO |
| TP-46-S2-10 | N | 205113-63 | 5/2/2022 | E | SO |
| TP-47-S1-5 | N | 205113-64 | 5/3/2022 | A, B, C, D, E, F, G, H | SO |
| TP-47-S2-10 | N | 205113-65 | 5/3/2022 | A, B, C, D, E, F | SO |
| TP-48-S1-5 | N | 205113-67 | 5/3/2022 | A, B, C, D, E, F, G, H | SO |
| TP-48-S1-5B | FD | 205113-68 | 5/3/2022 | A, B, C, D, E, F | SO |

| Sample ID | Sample Type | Lab ID | Sample Date | Methods | Matrix |
|---|---|---|---|---|---|
| TP-48-S2-10 | N | 205113-69 | 5/3/2022 | E, G, H | SO |
| TP-48-S3-15 | N | 205113-70 | 5/3/2022 | A, B, C, D, E, F | SO |
| TP-49-S1-2.5 | N | 205113-71 | 5/3/2022 | B, E, F, G, H | SO |
| TP-49-S2-5 | N | 205113-72 | 5/3/2022 | B, C, E, F, G, H | SO |
| TP-49-S3-7.5 | N | 205113-73 | 5/3/2022 | B, E, F, G, H | SO |
| TP-49-S4-10 | N | 205113-74 | 5/3/2022 | A, B, C, D, E, F, G, H | SO |
| TP-49-S5-18 | N | 205113-75 | 5/3/2022 | A, B, C, D, E, F, G, H | SO |
| TP-54-S1-5 | N | 205113-76 | 5/2/2022 | E | SO |
| TP-54-S2-10 | N | 205113-77 | 5/2/2022 | A, B, D, E, F | SO |
| TP-55-S1-2.5 | N | 205113-78 | 5/4/2022 | A, B, C, D, E, F, G, H | SO |
| TP-55-S2-5 | N | 205113-79 | 5/4/2022 | E, F, G, H | SO |
| TP-55-S3-10 | N | 205113-80 | 5/4/2022 | E, F, G, H | SO |
| TP-55-S4-15 | N | 205113-81 | 5/4/2022 | A, B, C, D, E, F, G, H | SO |
| TP-56-S1-2.5 | N | 205113-82 | 5/5/2022 | E | SO |
| TP-56-S2-5 | N | 205113-83 | 5/5/2022 | E | SO |
| TP-56-S3-10 | N | 205113-84 | 5/5/2022 | E | SO |
| TP-56-S4-15 | N | 205113-85 | 5/5/2022 | A, B, C, D, E, F | SO |
| TP-57-S1-5 | N | 205113-86 | 5/5/2022 | A, B, C, D, E, F | SO |
| TP-57-S2-10 | N | 205113-87 | 5/5/2022 | E, F | SO |
| TP-58-S1-2.5 | N | 205113-88 | 5/5/2022 | E, F | SO |
| TP-58-S2-5 | N | 205113-89 | 5/5/2022 | A, B, C, D, E, F | SO |
| TP-58-S3-10 | N | 205113-90 | 5/5/2022 | E, F | SO |
| TP-58-S4-13 | N | 205113-91 | 5/5/2022 | B, C, E, F | SO |
| TP-59-S1-5 | N | 205113-92 | 5/4/2022 | A, B, C, D, E, F, G, H | SO |
| TP-59-S2-10 | N | 205113-93 | 5/4/2022 | B, C, E, F, G, H | SO |
| TP-59-S3-15 | N | 205113-94 | 5/4/2022 | A, B, C, D, E, F, G, H | SO |
| TP-60-S1-5 | N | 205113-95 | 5/5/2022 | A, B, C, D, E, F | SO |
| TP-60-S2-10 | N | 205113-96 | 5/5/2022 | E | SO |
| TP-61-S1-5 | N | 205113-97 | 5/5/2022 | A, B, C, D, E, F | SO |
| TP-61-S2-10 | N | 205113-98 | 5/5/2022 | E | SO |
| TP-18-S1-5 | N | 205113-99 | 5/4/2022 | E | SO |
| TP-18-S2-10 | N | 205113-100 | 5/4/2022 | C, E | SO |
| TP-19-S1-5 | N | 205113-101 | 5/4/2022 | E | SO |
| TP-19-S2-10 | N | 205113-102 | 5/4/2022 | A, C, D, E | SO |
| TP-20-S1-5 | N | 205113-103 | 5/4/2022 | E, F, G, H | SO |
| TP-20-S1-10 | N | 205113-104 | 5/4/2022 | C, E | SO |
| TP-23-S1-5 | N | 205113-105 | 5/4/2022 | E | SO |
| TP-23-S2-10 | N | 205113-106 | 5/4/2022 | A, B, C, D, E, F | SO |
| TP-27-S1-5 | N | 205113-107 | 5/4/2022 | A, C, D, E, F | SO |
| TP-27-S2-10 | N | 205113-108 | 5/4/2022 | E | SO |
| TP-29-S1-5 | N | 205113-109 | 5/4/2022 | A, B, C, D, E, F, G, H | SO |
| TP-29-S2-10 | N | 205113-110 | 5/4/2022 | C, E, F | SO |

| Sample ID | Sample Type | Lab ID | Sample Date | Methods | Matrix |
|---|---|---|---|---|---|
| TP-38-S1-2.5 | N | 205113-111 | 5/2/2022 | E | SO |
| TP-38-S2-5.0 | N | 205113-112 | 5/2/2022 | A, C, D, E, F | SO |
| TP-38-S200 | FD | 205113-113 | 5/2/2022 | A, C, D, E, F | SO |
| TP-42-S1-2.5 | N | 205113-114 | 5/4/2022 | A, B, C, D, E, F, G, H | SO |
| TP-51-S3-15 | N | 205113-115 | 5/4/2022 | E | SO |
| TP-42-S2-5 | N | 205113-116 | 5/4/2022 | E, F, G, H | SO |
| TP-42-S3-10 | N | 205113-117 | 5/4/2022 | C, E, F | SO |
| TP-45-S1-5 | N | 205113-118 | 5/4/2022 | A, C, D, E, F | SO |
| TP-45-S3-10 | N | 205113-120 | 5/4/2022 | E | SO |
| TP-51-S1-5 | N | 205113-121 | 5/4/2022 | A, B, C, D, E, F, G, H | SO |
| TP-51-S2-10 | N | 205113-122 | 5/4/2022 | B, E, F, G, H | SO |
| TP-51-S100-5 | FD | 205113-123 | 5/4/2022 | A, B, C, D, E, F, G, H | SO |
| TP-52-S1-5 | N | 205113-124 | 5/4/2022 | A, C, D, E, F | SO |
| TP-52-S3-15 | N | 205113-125 | 5/4/2022 | E | SO |
| TP-50-S1-5 | N | 205113-126 | 5/4/2022 | C, E, F | SO |
| TP-48-S2-10B | FD | 205113-127 | 5/3/2022 | E, F | SO |
| TP-53-S1-5 | N | 205113-129 | 5/4/2022 | E, F | SO |
| TP-53-S2-10 | N | 205113-130 | 5/4/2022 | E | SO |
| TP-50-S2-10 | N | 205113-131 | 5/4/2022 | E | SO |

| Method Holding Times | | | |
|---|---|---|---|
| A. | Metals | SW6020 | 6 months |
| B. | Volatile organic compounds (VOCs) | SW8260D | 14 days |
| C. | Polycyclic aromatic compounds | SW8270E | 14 days extraction /40 days analysis |
| D. | Mercury | E1631E | 28 days |
| E. | Diesel- and oil-range petroleum hydrocarbons | NWTPH-DX | 14 days extraction /40 days analysis |
| F. | Gasoline-range hydrocarbons | NWTPH-GX | 14 days |
| G. | Extractable Petroleum Hydrocarbons | NWEPH | 14 days extraction /40 days analysis |
| H. | Volatile Petroleum Hydrocarbons | NWTPH-VPH | 14 days |

## 1.2 CASE NARRATIVE

The laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since these additional quality control issues were not required for the project's data quality objectives, these quality control issues were not reviewed.

The laboratory report case narratives included the following issues:

- Methylene chloride was detected in the 8260D analysis of several samples (TP-21-S2-10, TP-21-S200-10, TP-22-S1-5, TP-24-S1-2.5 TP-24-S100-2.5, TP-24-S2-5, TP-26-S1-2.5, TP-34-S2-5, TP-47-S1-5, TP-48-S1-5, TP-48-S1-5b, TP-49-S1-2.5, TP-49-S2-5, TP-49-S5-18, TP-55-S1-2.5, TP-57-S1-5, TP-58-S2-5, TP-59-S3-15, TP-60-S1-5, TP-61-S1-5, TP-29-S1-5, TP-51-S2-10). The

laboratory flagged the data due to contamination and the detections were flagged "LC" due to do suspected laboratory contamination.

- An 8270E internal standard failed the acceptance criteria for several samples. The affected samples were diluted and reanalyzed with acceptable results. The original results were marked non-reportable except for 205113-56 which marked the original sample as reportable as the surrogate recovery in the reanalysis was outside acceptance limits.
- The calibration verification for NWTPH-VPH was below acceptance criteria for several compounds for the following samples and were qualified J/UJ: TP-24-S100-2.5, TP-24-S1-2.5, TP-42-S2-5, TP-51-S100-5, TP-51-S1-5, TP-55-S4-15, TP-59-S1-5, TP-59-S2-10, TP-59-S3-15.

## 1.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol with the following exceptions:

| Method | Matrix | Holding Time | Preservation | Sample ID, Violation, Qualification |
|---|---|---|---|---|
| 8260D | Soil | 14 days | Methanol; Cool to ≤ 4 °C | The following samples were analyzed outside holding time and were qualified J/R: TP-49-S3-7.5, TP-49-S2-5 |
| NWTPH-VPH | Soil | 14 days | Methanol; Cool to ≤ 4 °C | The following samples were analyzed outside holding time and were qualified J/UJ: TP-20-S1-5, TP-21-S1-5, TP-21-S200-10, TP-21-S2-10, TP-21-S3-15, TP-22-S1-5, TP-24-S100-2.5, TP-24-S1-2.5, TP-24-S2-5, TP-25-S1-2.5, TP-26-S1-2.5, TP-29-S1-5, TP-42-S1-2.5, TP-42-S2-5, TP-51-S100-5, TP-51-S1-5, TP-51-S2-10, TP-55-S1-2.5, TP-55-S2-5, TP-55-S3-10, TP-55-S4-15, TP-59-S1-5, TP-59-S2-10, TP-59-S3-15 |

## 1.4 REPORTING LIMITS AND SAMPLE DILUTIONS

The reporting limits for the samples within this SDG met or were below the minimum reporting limit requirements specified by the Project-specific QAPP except where diluted due to matrix effects or non-target analytes.

## 1.5 REPORTING BASIS (WET/DRY)

Refer to section E 1.1. Soil data in this SDG were reported on a dry weight basis.

Where reported, percent moisture were reviewed and found to be within limits, with the following exceptions: TP-21-S1-5, TP-22-S1-5, TP-24-S1-2.5, TP-24-S100-2.5, TP-36-S1-3.5, TP-43-S2-7.5, TP-47-S1-5, TP-48-S1-5, TP-48-S2-10, TP-49-S2-5, TP-49-S3-7.5, TP-55-S2-5, TP-59-S1-5, and TP-20-S1-5. No qualifications were necessary.

## 1.6 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified quality control limits, with the following exceptions:

| Method | Sample ID | Lab ID | Surrogate | %R | Qualification |
|---|---|---|---|---|---|
| NWTPH-Gx | TP-24-S100-2.5 | 205113-14 | Gasoline Range Organics (GRO) surrogate | NR | None, surrogate compromised due to matrix effects |
| | TP-34-S1-2.5 | 205113-36 | | | |
| | TP-43-S4-14 | 205113-58 | | | |
| | TP-44-S1-5 | 205113-59 | | | |
| | TP-44-S2-10 | 205113-60 | | | |
| | TP-48-S1-5 | 205113-67 | | | |
| | TP-49-S3-7.5 | 205113-73 | | | |
| | TP-49-S4-10 | 205113-74 | | | |
| | TP-49-S5-18 | 205113-75 | | | |
| | TP-55-S1-2.5 | 205113-78 | | | |
| | TP-59-S1-5 | 205113-91 | | | |
| | TP-59-S2-10 | 205113-93 | | | |
| | TP-59-S3-15 | 205113-94 | | | |
| | TP-51-S100-5 | 205113-123 | | | |
| | TP-48-S2-10B | 205113-127 | | | |

*NR = not reported*

| Method | Sample ID | Lab ID | Surrogate | %R | Qualification |
|---|---|---|---|---|---|
| 8260D | TP-24-S1-2.5 | 205113-13 | 4-Bromofluorobenzene | 77% | J-/UJ target compounds* |
| | TP-34-S1-2.5 | 205113-36 | | 76% | |
| | TP-59-S2-10 | 205113-93 | | 67% | |

** Compounds targeted by 4-Bromofluorobenzene: 1,1,1,2-Tetrachloroethane. 1,1,2,2-Tetrachloroethane, 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dibromo-3-Chloropropane, 1,2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1-Chlorohexane, 2-Chlorotoluene, 4-Chlorotoluene, 4-Isopropyltoluene, Bromobenzene, Bromoform, Chlorobenzene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m-Xylene & p-Xylene, Naphthalene, n-Butylbenzene, N-Propylbenzene, o-Xylene, sec-Butylbenzene, Styrene, tert-Butylbenzene,trans-1,4-Dichloro-2-butene, Gasoline Range Organics*

| Method | Sample ID | Lab ID | Surrogate | %R | Qualification |
|---|---|---|---|---|---|
| NWTPH-VPH | TP-34-S1-2.5 | 2205254-011 | Bromofluorobenzene | 152% | J+/None target compounds* |
| | TP-48-S1-5 | 2205254-018 | | 453% | |
| | TP-48-S2-10 | 2205254-019 | | 742% | |
| | TP-49-S2-5 | 2205254-021 | | 202% | |
| | TP-49-S3-7.5 | 2205254-022 | | 838% | |
| | TP-49-S4-10 | 2205254-023 | | 691% | |
| | TP-49-S5-18 | 2205254-024 | | 595% | |
| | TP-55-S4-15 | 2205254-028 | | 330% | |
| | TP-59-S2-10 | 2205254-030 | | 224% | |
| | TP-59-S3-15 | 2205254-031 | | 207% | |
| | TP-49-S3-7.5 | 2205254-022 | 1,4-Difluorobenzene | 186% | |
| | TP-49-S4-10 | 2205254-023 | | 213% | |
| | TP-49-S5-18 | 2205254-024 | | 221% | |
| | TP-55-S4-15 | 2205254-028 | | 190% | |

** Compounds targeted by 1,4-Difluorobenzene and Bromofluorobenzene: Aromatic C8-10, Aromatic C10-12, Aromatic C12-13, Aliphatic C5-6, Aliphatic C6-8, Aliphatic C8-10, Aliphatic C10-12*

| Method | Sample ID | Lab ID | Surrogate | %R | Qualification |
|---|---|---|---|---|---|
| 8270E | TP-34-S1-2.5 | 205113-36 | Various | Various | None, dilution >5x |
| 8270E | TP-43-S2-7.5b | 205513-55 | Various | Various | None, dilution >5x |
| 8270E | TP-43-S4-14 | 205113-58 | Various | Various | None, dilution >5x |
| 8270E | TP-43-S3-10 | 205113-56 analyzed on 5/18 and 5/27 | Various | Various | None, dilution >5x |
| 8270E | TP-42-S1-2.5 | 205113-114 | Various | Various | None, dilution >5x |
| 8270E | TP-24-S1-2.5 | 205113-13 | Various | Various | None, dilution >5x |
| 8270E | TP-24-S100-2.5 | 205113-14 | Various | Various | None, dilution >5x |
| 8270E | TP-34-S1-2.5 | 205113-36 | Various | Various | None, dilution >5x |
| 8270E | TP-36-S1-3.5 | 205113-41 | 2,4,6-Tribromophenol | 174% | None, target analytes not reported |
| | TP-24-S1-2.5 | 205113-13 | 2-Fluorophenol | 20% | None, target analytes not reported |
| | TP-36-S1-2.5 | 205113-41 | | 34% | |
| | TP-40-S1-5 | 205113-49 | | 35% | |
| | TP-43-S3-1000 | 205113-57 | | 25% | |
| | TP-48-S1-5 | 205113-67 | | 33% | |
| | TP-49-S4-10 | 205113-74 | Nitrobenzene-d5 | 196% | None, target analytes not reported |
| | TP-49-S5-18 | 205113-75 | | 142% | |
| | TP-44-S2-10 | 205113-60 | | 153% | J+/None target compounds* |
| | TP-48-S1-5 | 205113-67 | | 318% | |
| | TP-59-S2-10 | 205113-93 | | 195% | |
| | TP-59-S3-15 | 205113-94 | | 170% | |
| 8270E | TP-24-S1-2.5 | 205113-13 | Phenol-d6 | 47% | |

| Method | Sample ID | Lab ID | Surrogate | %R | Qualification |
|---|---|---|---|---|---|
| | TP-24-S100-2.5 | 205113-14 | | 33% | None, target analytes not reported |
| | TP-36-S1-2.5 | 205113-41 | | 44% | |
| | TP-40-S1-5 | 205113-49 | | 42% | |
| | TP-43-S3-1000 | 205113-57 | | 35% | |
| | TP-48-S1-5 | 205113-67 | | 37% | |
| | TP-44-S2-10 | 205113-60 | Terphenyl-d14 | 150% | J+/None target compounds** |

** Compounds targeted by Nitrobenzene-d5: 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2-Picoline, 4-Chloroaniline, alpha,alpha-Dimethyl phenethylamine, Acetophenone, Aniline, Benzaldehyde, Benzyl alcohol, 2,2'-oxybis[1-chloropropane], Bis(2-chloroethoxy)methane, Bis(2-chloroethyl)ether, Ethyl methanesulfonate, Hexachlorobutadiene, Hexachloroethane, Hexachloropropene, Methyl methanesulfonate, Naphthalene, N-Nitrosodiethylamine, N-Nitrosodimethylamine, N-Nitrosodi-n-propylamine, N-Nitrosomethylethylamine, N-Nitrosomorpholine, N-Nitrosopyrrolidine, o,o',o''-Triethylphosphorothioate, 2-Toluidine, Pentachloroethane, Pyridine*

*** Compounds targeted by Terphenyl-d14: Disulfoton, Pentachloronitrobenzene, Phenanthrene, Pronamide*

## 1.7 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses exhibited recoveries and relative percent differences (RPDs) within the specified limits with the following exceptions:

| Sample Type | Method | Analyte | %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|---|
| LCS/LCSD | 8260D | Methylene chloride | RPD = 58 | J/None | All samples |
| LCS | NWTPH-VPH | Aliphatic Hydrocarbon (C5-C6) | 218% | J/None | TP-36-S1-3.5, TP-34-S1-2.5, TP-43-S4-14, TP-43-S2-7.5, TP-44-S2-10, TP-44-S1-5, TP-47-S1-5, TP-48-S2-10, TP-48-S1-5, TP-49-S2-5, TP-49-S1-2.5, TP-49-S3-7.5, TP-49-S4-10, TP-49-S5-18 |
| | | Aromatic Hydrocarbon (C12-C13) | 20,400% | J/None | TP-36-S1-3.5, TP-34-S1-2.5, TP-43-S4-14, TP-43-S2-7.5, TP-44-S2-10, TP-44-S1-5, TP-47-S1-5, TP-48-S2-10, TP-48-S1-5, TP-49-S2-5, TP-49-S1-2.5, TP-49-S3-7.5, TP-49-S4-10, TP-49-S5-18 |

## 1.8 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) below were used for matrix spike/matrix spike duplicate (MS/MSD):

| Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 205113-01 | TP-16-S1-5 | NWTPH-Dx, 8260D |
| 205113-47 | TP-39-S1-2.5 | NWTPH-Dx |
| 205113-69 | TP-48-S2-10 | NWTPH-Dx |
| 205113-89 | TP-58-S2-5 | NWTPH-Dx |
| 205113-109 | TP-29-S1-5 | NWTPH-Dx |
| 205113-02 | TP-16-S2-10 | 6020B, 1631E |
| 205113-51 | TP-41-S1-5 | 6020B, 1631E |
| 205113-92 | TP-59-S1-5 | 6020B, 1631E |
| 205113-04 | TP-17-S2-10 | 8270E |
| 205113-42 | TP-36-S2-10.5 | 8270E |
| 205113-74 | TP-49-S4-10 | 8270E |
| 205113-112 | TP-38-S2-5.0 | 8270E |
| 2205254-003AMS | TP-21-S200-10 | NWEPH |
| 2205254-003AMSD | TP-21-S200-10 | NWEPH |
| 2205254-020AMS | TP-49-S1-2.5 | NWEPH |
| 2205254-020AMSD | TP-49-S1-2.5 | NWEPH |
| 2205254-024BMS | TP-49-S5-18 | NWTPH-VPH |
| 2205254-002BMS | TP-21-S2-10 | NWTPH-VPH |
| 2205254-025BMS | TP-55-S1-2.5 | NWTPH-VPH |

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits with the following exceptions:

| Sample Type | Method | Parent Sample | Analyte | %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|
| MSD | 6020B | 205113-02 | Arsenic | 71% | J/UJ | All samples |
| MS/MSD | 6020B | 205113-02 | Selenium | 68%/63% | J/UJ | All samples |
| MS/MSD | 6020B | 205113-02 | Zinc | RPD = 24 | None | None, native sample > 4x the spike added |
| MS | 6020B | 205113-51 | Chromium | 74% | J/UJ | All samples |

| Sample Type | Method | Parent Sample | Analyte | %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|
| MS/MSD | 6020B | 205113-51 | Copper | RPD = 22 | None | None, native sample > 4x the spike added |
| MS/MSD | 6020B | 205113-51 | Selenium | 68%69% | J/UJ | All samples |
| MS/MSD | 6020B | 205113-92 | Arsenic | 69%/68% | J/UJ | All samples |
| MS/MSD | 6020B | 205113-92 | Selenium | 61%/59% | J/UJ | All samples |
| MS/MSD | 8270E | 205113-04 | Naphthalene | RPD = 26 | J/None | None, samples are ND |
| MS/MSD | 8270E | 205113-04 | 2-Methylnaphthalene | RPD = 21 | J/None | None, samples are ND |
| MS/MSD | 8270E | 205113-04 | Indeno(1,2,3-cd)pyrene | RPD = 22 | J/None | None, samples are ND |
| MS/MSD | 8270E | 205113-04 | Dibenz(a,h)anthracene | RPD = 26 | J/None | None, samples are ND |
| MSD | 8270E | 205113-74 | Naphthalene | 15% | None | None, native sample > 4x the spike added |
| MSD | NWEPH | TP-49-S1-2.5 | Aliphatic Hydrocarbon (C10-C12) | 251%/RPD = 50.3 | J/None | TP-49-S1-2.5 |
| MS/MSD | NWEPH | TP-49-S1-2.5 | Aliphatic Hydrocarbon (C12-C16) | 141%/388 %/RPD = 72.9 | J/None | TP-49-S1-2.5 |
| MSD | NWEPH | TP-49-S1-2.5 | Aliphatic Hydrocarbon (C16-C21) | 198%/RPD = 52.2 | J/None | TP-49-S1-2.5 |
| MSD | NWEPH | TP-49-S1-2.5 | Aliphatic Hydrocarbon (C21-C34) | 136%/RPD = 36.5 | J/None | TP-49-S1-2.5 |
| MSD | NWEPH | TP-49-S1-2.5 | Aromatic Hydrocarbon (C12-C16) | 189% | J/None | TP-49-S1-2.5 |
| MSD | NWEPH | TP-49-S1-2.5 | Aromatic Hydrocarbon (C16-C21) | RPD = 35 | J/None | TP-49-S1-2.5 |
| MS | NWTPH-VPH | TP-49-S5-18 | Aliphatic Hydrocarbon (C5-C6) | 159% | J/None | TP-49-S5-18 |
| MS | NWTPH-VPH | TP-49-S5-18 | Aliphatic Hydrocarbon (C6-C8) | -26.1% | None | None, native sample > 4x the spike added |
| MS | NWTPH-VPH | TP-49-S5-18 | Aliphatic Hydrocarbon (C8-C10) | -77.6% | None | None, native sample > 4x the spike added |

| Sample Type | Method | Parent Sample | Analyte | %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|
| MS | NWTPH-VPH | TP-49-S5-18 | Aliphatic Hydrocarbon (C10-C12) | 20.3% | None | None, native sample > 4x the spike added |
| MS | NWTPH-VPH | TP-49-S5-18 | Aromatic Hydrocarbon (C8-C10) | 5.57% | None | None, native sample > 4x the spike added |
| MS | NWTPH-VPH | TP-49-S5-18 | Aromatic Hydrocarbon (C10-C12) | -1,290% | None | None, native sample > 4x the spike added |
| MS | NWTPH-VPH | TP-49-S5-18 | Aromatic Hydrocarbon (C12-C13) | -2,740% | None | None, native sample > 4x the spike added |
| MS | NWTPH-VPH | TP-55-S1-2.5 | Aromatic Hydrocarbon (C10-C12) | 55.7% | J/UJ | TP-55-S1-2.5 |

## 1.9 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred, with the following exceptions:

| Blank Type | Batch ID | Analyte Detected in Blank | Concentration (mg/kg) | Qualifier | Affected Samples |
|---|---|---|---|---|---|
| Method Blank | 36430 | Aliphatic Hydrocarbon (C10-C12) | 78.3 | J+ | TP-24-S1-2.5, TP-24-S100-2.5, TP-34-S1-2.5, TP-36-S1-3.5, TP-43-S4-14, TP-44-S1-5, TP-44-S2-10, TP-48-S1-5, TP-48-S2-10 |
| Method Blank | 36430 | Aliphatic Hydrocarbon (C10-C12) | 78.3 | Result U | TP-21-S2-10, TP-21-S200-10 |

## 1.10 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The following sample(s) were used for laboratory duplicate analysis and the RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 timesthe RL) with the following exceptions:

| Lab Sample Number | Laboratory Duplicate Sample Client ID | Method(s)/Analyte | % RPD | Qualification |
|---|---|---|---|---|
| 2205254-026BDUP | TP-55-S2-5 | NWTPH-VPH / Aromatic Hydrocarbon (C12-C13) | 43.8% | J/UJ, RPD > 20% |

The following sample(s) were used for field duplicate analysis. The RPD comparison for detections in either the parent or duplicate sample(s) is shown below. RPDs were all below 50 percent for soil (or the absolute difference rule was satisfied if detects were less than 5 times the RL). Any exceptions are noted below and qualified.

| Primary Sample ID | Duplicate Sample ID | Method(s) |
|---|---|---|
| TP-38-S2-5.0 | TP-38-S200 | E1631E, SW6020, SW8270E, NWTPH-DX, NWTPH-GX |
| TP-48-S2-10 | TP-48-S2-10B | NWTPH-DX, NWTPH-GX |
| TP-48-S1-5 | TP-48-S1-5B | E1631E, SW6020, SW8270E, NWTPH-DX, NWTPH-GX |
| TP-43-S3-10 | TP-43-S3-1000 | E1631E, SW6020, SW8260D, SW8270E, NWTPH-DX |
| TP-43-S2-7.5 | TP-43-S2-7.5B | NWTPH-DX, NWTPH-GX |
| TP-21-S2-10 | TP-21-S200-10 | E1631E, SW6020, SW8260D, SW8270E, NWEPH, NWTPH-VPH, NWTPH-DX, NWTPH-GX |
| TP-24-S1-2.5 | TP-24-S100-2.5 | E1631E, SW6020, SW8260D, SW8270E, NWEPH, NWTPH-VPH, NWTPH-DX, NWTPH-GX |
| TP-51-S1-5 | TP-51-S100-5 | E1631E, SW6020, SW8260D, SW8270E, NWEPH, NWTPH-VPH, NWTPH-DX, NWTPH-GX |

**Field Duplicate RPD Calculations:**

| Method(s): SW6020, SW8260D, SW8270E, NWTPH-VPH, NWTPH-Dx | | | | |
|---|---|---|---|---|
| **Analyte (mg/kg)** | **Primary Sample ID** | **Duplicate Sample ID** | **% RPD** | **Qualification** |
| | **TP-48-S2-10** | **TP-48-S2-10B** | | |
| Diesel Range Organics | 370 | 50 U | NA | J/UJ, Abs. Diff. > RL |
| PHC as Lube Oil | 640 | 250 U | NA | J/UJ, Abs. Diff. > RL |
| **Analyte (mg/kg)** | **Primary Sample ID** | **Duplicate Sample ID** | **% RPD** | **Qualification** |
| | **TP-43-S2-7.5** | **TP-43-S2-7.5B** | | |
| Diesel Range Organics | 50 U | 340 | NA | J/UJ, Abs. Diff. > RL |
| PHC as Lube Oil | 250 U | 1100 | NA | J/UJ, Abs. Diff. > RL |
| **Analyte (mg/kg)** | **Primary Sample ID** | **Duplicate Sample ID** | **% RPD** | **Qualification** |
| | **TP-21-S2-10** | **TP-21-S200-10** | | |
| Aromatic Hydrocarbon (C10-C12) | 1.56 | 0.764 | NA | J/UJ, Abs. Diff. > RL |
| 1-Methylnaphthalene | 0.0026 | 0.0061 | NA | J/UJ, Abs. Diff. > RL |
| 2-Methylnaphthalene | 0.002 | 0.011 | NA | J/UJ, Abs. Diff. > RL |
| Diesel Range Organics | 50 | 160 | NA | J/UJ, Abs. Diff. > RL |
| Lead | 0.1 | 3.35 | NA | J/UJ, Abs. Diff. > RL |
| m,p-Xylenes | 3.17 | 0.004 | NA | J/UJ, Abs. Diff. > RL |
| Methylene chloride | 0.002 | 0.79 | NA | J/UJ, Abs. Diff. > RL |
| Naphthalene | 0.83 | 0.01 | NA | J/UJ, Abs. Diff. > RL |
| Nickel | 0.002 | 9.3 | NA | J/UJ, Abs. Diff. > RL |
| n-Propylbenzene | 9.47 | 0.1 | NA | J/UJ, Abs. Diff. > RL |
| **Analyte (mg/kg)** | **Primary Sample ID** | **Duplicate Sample ID** | **% RPD** | **Qualification** |
| | **TP-24-S1-2.5** | **TP-24-S100-2.5** | | |
| 1,2,4-Trimethylbenzene | 0.1 | 0.62 | NA | J/UJ, Abs. Diff. > RL |
| 1-Methylnaphthalene | 0.14 | 0.024 | NA | J/UJ, Abs. Diff. > RL |
| 2-Methylnaphthalene | 0.042 | 0.02 | NA | J/UJ, Abs. Diff. > RL |
| 2-Phenylbutane | 0.1 | 0.23 | NA | J/UJ, Abs. Diff. > RL |
| Chrysene | 0.035 | 0.057 | NA | J/UJ, Abs. Diff. > RL |
| Copper | 56.2 | 116 | 69% | J/UJ, RPD > 50% |
| Ethylbenzene | 0.0076 | 0.005 | NA | J/UJ, Abs. Diff. > RL |
| Fluorene | 0.042 | 0.02 | NA | J/UJ, Abs. Diff. > RL |
| Gasoline Range Organics | 90 | 290 | 105% | J/UJ, RPD > 50% |
| Lead | 21.5 | 157 | 152% | J/UJ, RPD > 50% |
| m,p-Xylenes | 0.023 | 0.004 | NA | J/UJ, Abs. Diff. > RL |
| Methylene chloride (Dichloromethane) | 1.1 | 2.8 | NA | J/UJ, Abs. Diff. > RL |
| Naphthalene | 0.047 | 0.01 | NA | J/UJ, Abs. Diff. > RL |
| o-Xylene | 0.0075 | 0.0032 | NA | J/UJ, Abs. Diff. > RL |
| Pyrene | 0.049 | 0.096 | NA | J/UJ, Abs. Diff. > RL |
| Tetrachloroethene | 0.002 | 0.0074 | NA | J/UJ, Abs. Diff. > RL |
| Trichloroethene | 0.015 | 0.0029 | NA | J/UJ, Abs. Diff. > RL |

| Method(s): SW6020, SW8260D, SW8270E, NWTPH-VPH, NWTPH-Dx | | | | |
|---|---|---|---|---|
| **Analyte (mg/kg)** | **Primary Sample ID** | **Duplicate Sample ID** | **% RPD** | **Qualification** |
| | **TP-51-S1-5** | **TP-51-S100-5** | | |
| Nickel | 17.5 | 11 | NA | J/UJ, Abs. Diff. > RL |
| **Analyte (mg/kg)** | **Primary Sample ID** | **Duplicate Sample ID** | **% RPD** | **Qualification** |
| | **TP-43-S3-10** | **TP-43-S3-1000** | | |
| Arsenic | 2.44 | 1.38 | NA | J/UJ, Abs. Diff. > RL |
| Diesel Range Organics | 120 | 50 | NA | J/UJ, Abs. Diff. > RL |
| Lead | 42.3 | 5.71 | 152% | J/UJ, RPD > 50% |
| PHC as Lube Oil | 1100 | 250 | NA | J/UJ, Abs. Diff. > RL |
| Zinc | 597 | 62.9 | 162% | J/UJ, RPD > 50% |

## 1.11 PRECISION AND ACCURACY

Refer to section E 1.7. Where required by the method, some measurement of analytical accuracy and precision was reported for each method with the site samples.

## 1.12 SUSPECTED LABORATORY CONTAMINATION

Methylene chloride was detected in several samples, however the detections were flagged “LC” due to do suspected laboratory contamination (methylene chloride is frequently used for cleaning equipment in the laboratory).

## 1.13 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable except for rejected data noted below. A summary of qualifiers applied to this data set is shown in Table E-10.

## 2. Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.1 Reporting Basis (Wet/Dry)
  - Soil samples can be reported on either a wet (as received) or dry weight basis. Dry weight data indicate calculations were made to compensate for the moisture content of the soil sample.
  - Percent (%) solids should be appropriately considered when evaluating analytical results for non-aqueous samples. Sediments with high moisture content may or may not be successfully analyzed by routine analytical methods. Samples should have greater than or equal to 30 percent solids to be appropriately quantified.
- E 1.2 Surrogate Recovery Compliance
  - Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to sample preparation to determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds.
- E 1.3 Laboratory Control Samples
  - The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the relative percent difference (%RPD) found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.

- Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the percent recovery (%Rec) of certain spiked compounds. This can be assessed using LCS, BS, MS, and/or surrogate recoveries.

# 3. Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg microgram per kilogram
  - µg/L microgram per liter
  - µg/m3 microgram per cubic meter
  - mg/kg milligram per kilogram
  - mg/L milligram per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - WQ Water Quality control matrix
  - WS Surface Water
- Table Footnotes:
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Common Symbols:
  - % percent
  - < less than
  - ≤ less than or equal to
  - > greater than
  - ≥ greater than or equal to
  - = equal
  - °C degrees Celsius
  - ± plus or minus
  - ~ approximately
  - x times (multiplier)

# 4. Abbreviations

| | |
|---|---|
| %D | Percent Difference |
| %R | Percent Recovery |
| %RSD | Percent Relative Standard Deviation |
| %v/v | Percent volume by volume |
| µg/L | micrograms per liter |
| 2s | 2 sigma |
| 4,4-DDT | 4 4-dichlorodiphenyltrichloroethane |
| Abs Diff | Absolute Difference |
| BPJ | Best Professional Judgement |
| BS | Blank Spike |
| CCB | Continuing Calibration Blank |
| CCV | Continuing Calibration Verification |
| CCVL | Continuing Calibration Verification Low |
| COC | Chain of Custody |
| COM | Combined Isotope Calculation |
| Cr (VI) | Hexavalent Chromium |
| CRI | Collision Reaction Interface |
| DoD | Department of Defense |
| DUSR | Data Usability Summary Report |
| EMPC | Estimated Maximum Possible Concentration |
| FBK | Field Blank Contamination |
| FDP | Field Duplicate |
| GC | Gas Chromatograph |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| GPC | Gel Permeation Chromatography |
| H2 | Hydrogen gas |
| HCl | Hydrochloric Acid |
| ICAL | Initial Calibration |
| ICB | Initial Calibration Blank |
| ICP/MS | Inductively Coupled Plasma/ Mass Spectrometry |
| ICV | Initial Calibration Verification |
| ICVL | Initial Calibration Verification Low |
| IPA | Isopropyl Alcohol |
| LC | Laboratory Control |
| LCS/LCSD | Laboratory Control Sample/Laboratory Control Sample Duplicate |
| MBK | Method Blank Contamination |
| MDC | Minimum Detectable Concentration |
| MDL | Laboratory Method Detection Limit |
| mg/kg | milligrams per kilogram |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | not applicable |
| ND | Non-Detect |
| NFG | National Functional Guidelines |
| $NH_3$ | Ammonia |
| NYSDEC | New York State Department of Environmental Conservation |
| PAH | polycyclic aromatic hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PDS | Post Digestion Spike |
| PEM | Performance Evaluation Mixture |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFBA | Perfluorbutanoic Acid |
| PFD | Perfluorodecalin |
| PFOA | Perfluorooctanoic Acid |
| PFOS | Perfluorooctanoic Acid |
| PFPeA | nonafluorovaleric acid |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QSM | Quality Systems Manual |
| $R^2$ | R-squared value |
| Ra-226 | Radium-226 |
| Ra-228 | Radium-228 |
| RESC | Resolution Check Measure |
| RL | Laboratory Reporting Limit |
| RPD | Relative Percent Difference |
| RRF | Relative Response Factors |
| RT | Retention Time |
| SAP | sampling analysis plan |
| SDG | Sample Delivery Group |
| SIM | Selected ion monitoring |
| SOP | Laboratory Standard Operating Procedures |
| SPE | Solid Phase Extraction |
| SVOC | Semi-Volatile Organic Compounds |
| TIC | Tentatively Identified Compound |
| TKN | Total Kjeldahl Nitrogen |
| TPH | Total Petroleum Hydrocarbon |
| TPU | Total Propagated Uncertainty |
| u | atomic mass unit |
| USEPA | U.S. Environmental Protection Agency |
| VOC | Volatile Organic Compounds |
| WP | Work Plan |

# 5. Qualifiers

The qualifiers below are from the USEPA National Functional Guidelines and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:

  U — The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".

  B — The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers:

  E — The compound was quantitated above the calibration range.

  D — The concentration is based on a diluted sample analysis.

- Validation Qualifiers:

  J — The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  J+ — The result is an estimated quantity, but the result may be biased high.

  J- — The result is an estimated quantity, but the result may be biased low.

  J/UJ — as listed in exception tables J applies to detected data and UJ applies to non-detected data as reported by the laboratory.

  UJ — The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

  NJ — The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.

  R — The sample results were rejected as unusable; the compound may or may not be present in the sample.

  S — Result is suspect. See DUSR for details.

## References


1. Haley & Aldrich, Inc, 2021. Quality Assurance Project Plan. Remedial Investigation Work Plan. Kosmos Mill Oil Cleanup. Site Code: 19499-02. Seattle Washington. December 2021.
2. United States Environmental Protection Agency (USEPA), 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January 2017.
3. USEPA, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January 2017.

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW6020 | NA | TP-16-S2-10 | 205113-02 | Arsenic | 1.31 | 1.31 J | MSD |
| 205113 | SW6020 | NA | TP-16-S2-10 | 205113-02 | Chromium | 11.5 | 11.5 J | MSD |
| 205113 | SW6020 | NA | TP-16-S2-10 | 205113-02 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-17-S2-10 | 205113-04 | Arsenic | 1.22 | 1.22 J | MSD |
| 205113 | SW6020 | NA | TP-17-S2-10 | 205113-04 | Chromium | 11.2 | 11.2 J | MSD |
| 205113 | SW6020 | NA | TP-17-S2-10 | 205113-04 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-19-S2-10 | 205113-102 | Arsenic | 1.44 | 1.44 J | MSD |
| 205113 | SW6020 | NA | TP-19-S2-10 | 205113-102 | Chromium | 11.5 | 11.5 J | MSD |
| 205113 | SW6020 | NA | TP-19-S2-10 | 205113-102 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-20-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 2 | 2 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-20-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 6.22 | 6.22 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-20-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 40.7 | 40.7 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-20-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-20-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-20-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-20-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 1.92 | 1.92 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 5.7 | 5.7 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S1-5 | 205113 -103 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | NWTPH-DX | NA | TP-21-S200-10 | 205113-08 | Diesel Range Organics | 160 | 160 J | FDP |
| 205113 | SW6020 | NA | TP-21-S200-10 | 205113-08 | Lead | 3.35 | 3.35 J | FDP |
| 205113 | SW6020 | NA | TP-21-S200-10 | 205113-08 | Nickel | 9.3 | 9.3 J | FDP |
| 205113 | SW8260D | NA | TP-21-S200-10 | 205113-08 | Naphthalene | U | UJ | FDP |
| 205113 | SW8260D | NA | TP-21-S200-10 | 205113-08 | m,p-Xylenes | U | UJ | FDP |
| 205113 | SW8260D | NA | TP-21-S200-10 | 205113-08 | n-Propylbenzene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-21-S200-10 | 205113-08 | 1-Methylnaphthalene | 0.061 | 0.061 J | FDP |
| 205113 | SW8270E | NA | TP-21-S200-10 | 205113-08 | 2-Methylnaphthalene | 0.011 | 0.011 J | FDP |
| 205113 | SW8270E | NA | TP-21-S200-10 | 205113-08 | Naphthalene | U | UJ | FDP |
| 205113 | NWTPH-VPH | NA | TP-21-S200-10 | 205113-08 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 0.764 | 0.764 J | FDP, HTQ |
| 205113 | SW8260D | NA | TP-21-S200-10 | 205113-08 | Methylene chloride (Dichloromethane) | 0.79 | 0.79 J, LC | FDP, LCS |
| 205113 | NWTPH-VPH | NA | TP-21-S200-10 | 205113-08 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S200-10 | 205113-08 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 1.82 | 1.82 J | HTQ |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
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| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | NWTPH-VPH | NA | TP-21-S200-10 | 205113-08 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S200-10 | 205113-08 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S200-10 | 205113-08 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S200-10 | 205113-08 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | NWEPH | NA | TP-21-S200-10 | 205113-08 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | U | U | MBK |
| 205113 | SW6020 | NA | TP-21-S200-10 | 205113-08 | Arsenic | 1.08 | 1.08 J | MSD |
| 205113 | SW6020 | NA | TP-21-S200-10 | 205113-08 | Chromium | 10.9 | 10.9 J | MSD |
| 205113 | SW6020 | NA | TP-21-S200-10 | 205113-08 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-DX | NA | TP-21-S2-10 | 205113-07 | Diesel Range Organics | U | UJ | FDP |
| 205113 | SW6020 | NA | TP-21-S2-10 | 205113-07 | Lead | 3.17 | 3.17 J | FDP |
| 205113 | SW6020 | NA | TP-21-S2-10 | 205113-07 | Nickel | 9.47 | 9.47 J | FDP |
| 205113 | SW8260D | NA | TP-21-S2-10 | 205113-07 | Naphthalene | U | UJ | FDP |
| 205113 | SW8260D | NA | TP-21-S2-10 | 205113-07 | m,p-Xylenes | U | UJ | FDP |
| 205113 | SW8260D | NA | TP-21-S2-10 | 205113-07 | n-Propylbenzene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-21-S2-10 | 205113-07 | 1-Methylnaphthalene | 0.0026 | 0.0026 J | FDP |
| 205113 | SW8270E | NA | TP-21-S2-10 | 205113-07 | 2-Methylnaphthalene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-21-S2-10 | 205113-07 | Naphthalene | U | UJ | FDP |
| 205113 | NWTPH-VPH | NA | TP-21-S2-10 | 205113-07 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 1.56 | 1.56 J | FDP, HTQ |
| 205113 | SW8260D | NA | TP-21-S2-10 | 205113-07 | Methylene chloride (Dichloromethane) | 0.83 | 0.83 J, LC | FDP, LCS |
| 205113 | NWTPH-VPH | NA | TP-21-S2-10 | 205113-07 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S2-10 | 205113-07 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 2.09 | 2.09 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S2-10 | 205113-07 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S2-10 | 205113-07 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S2-10 | 205113-07 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S2-10 | 205113-07 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | NWEPH | NA | TP-21-S2-10 | 205113-07 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | U | U | MBK |
| 205113 | SW6020 | NA | TP-21-S2-10 | 205113-07 | Arsenic | 0.879 | 0.879 J | MSD |
| 205113 | SW6020 | NA | TP-21-S2-10 | 205113-07 | Chromium | 12.1 | 12.1 J | MSD |
| 205113 | SW6020 | NA | TP-21-S2-10 | 205113-07 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-21-S3-15 | 205113 -09 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 0.591 | 0.591 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S3-15 | 205113 -09 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 1.28 | 1.28 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S3-15 | 205113 -09 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 2.73 | 2.73 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S3-15 | 205113 -09 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S3-15 | 205113 -09 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S3-15 | 205113 -09 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-21-S3-15 | 205113 -09 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
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| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | NWTPH-VPH | NA | TP-22-S1-5 | 205113-10 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-22-S1-5 | 205113-10 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-22-S1-5 | 205113-10 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 0.794 | 0.794 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-22-S1-5 | 205113-10 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-22-S1-5 | 205113-10 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-22-S1-5 | 205113-10 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-22-S1-5 | 205113-10 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | SW8260D | NA | TP-22-S1-5 | 205113-10 | Methylene chloride (Dichloromethane) | 0.48 | 0.48 J, LC | LCS |
| 205113 | SW6020 | NA | TP-22-S1-5 | 205113-10 | Arsenic | 1.71 | 1.71 J | MSD |
| 205113 | SW6020 | NA | TP-22-S1-5 | 205113-10 | Chromium | 26.5 | 26.5 J | MSD |
| 205113 | SW6020 | NA | TP-22-S1-5 | 205113-10 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-23-S2-10 | 205113-106 | Arsenic | 0.976 | 0.976 J | MSD |
| 205113 | SW6020 | NA | TP-23-S2-10 | 205113-106 | Chromium | 15 | 15 J | MSD |
| 205113 | SW6020 | NA | TP-23-S2-10 | 205113-106 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-24-S100-2.5 | 205113-14 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 1900 | 1900 J | EXE, HTQ |
| 205113 | NWTPH-GX | NA | TP-24-S100-2.5 | 205113-14 | Gasoline Range Organics | 290 | 290 J | FDP |
| 205113 | SW6020 | NA | TP-24-S100-2.5 | 205113-14 | Copper | 116 | 116 J | FDP |
| 205113 | SW6020 | NA | TP-24-S100-2.5 | 205113-14 | Lead | 157 | 157 J | FDP |
| 205113 | SW8260D | NA | TP-24-S100-2.5 | 205113-14 | 1,2,4-Trimethylbenzene | 0.62 | 0.62 J | FDP |
| 205113 | SW8260D | NA | TP-24-S100-2.5 | 205113-14 | 2-Phenylbutane (sec-Butylbenzene) | 0.23 | 0.23 J | FDP |
| 205113 | SW8260D | NA | TP-24-S100-2.5 | 205113-14 | Ethylbenzene | 0.005 | 0.005 J | FDP |
| 205113 | SW8260D | NA | TP-24-S100-2.5 | 205113-14 | Naphthalene | U | UJ | FDP |
| 205113 | SW8260D | NA | TP-24-S100-2.5 | 205113-14 | Tetrachloroethene | 0.0074 | 0.0074 J | FDP |
| 205113 | SW8260D | NA | TP-24-S100-2.5 | 205113-14 | Trichloroethene | 0.0029 | 0.0029 J | FDP |
| 205113 | SW8260D | NA | TP-24-S100-2.5 | 205113-14 | m,p-Xylenes | U | UJ | FDP |
| 205113 | SW8260D | NA | TP-24-S100-2.5 | 205113-14 | o-Xylene | 0.0032 | 0.0032 J | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | 1-Methylnaphthalene | 0.024 | 0.024 J | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | 1-Methylnaphthalene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | 2-Methylnaphthalene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | 2-Methylnaphthalene | 0.02 | 0.02 J | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | Chrysene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | Chrysene | 0.057 | 0.057 J | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | Fluorene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | Fluorene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | Naphthalene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | Naphthalene | U | UJ | FDP |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
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| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | Pyrene | 0.096 | 0.096 J | FDP |
| 205113 | SW8270E | NA | TP-24-S100-2.5 | 205113-14 | Pyrene | U | UJ | FDP |
| 205113 | SW8260D | NA | TP-24-S100-2.5 | 205113-14 | Methylene chloride (Dichloromethane) | 2.8 | 2.8 J, LC | FDP, LCS |
| 205113 | NWTPH-VPH | NA | TP-24-S100-2.5 | 205113-14 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S100-2.5 | 205113-14 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 135 | 135 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S100-2.5 | 205113-14 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S100-2.5 | 205113-14 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S100-2.5 | 205113-14 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S100-2.5 | 205113-14 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 9.02 | 9.02 J | HTQ |
| 205113 | NWEPH | NA | TP-24-S100-2.5 | 205113-14 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | 250 | 250 J+ | MBK |
| 205113 | SW6020 | NA | TP-24-S100-2.5 | 205113-14 | Arsenic | 4.13 | 4.13 J | MSD |
| 205113 | SW6020 | NA | TP-24-S100-2.5 | 205113-14 | Chromium | 18.1 | 18.1 J | MSD |
| 205113 | SW6020 | NA | TP-24-S100-2.5 | 205113-14 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-24-S1-2.5 | 205113-13 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 1040 | 1040 J | EXE, HTQ |
| 205113 | NWTPH-GX | NA | TP-24-S1-2.5 | 205113-13 | Gasoline Range Organics | 90 | 90 J | FDP |
| 205113 | SW6020 | NA | TP-24-S1-2.5 | 205113-13 | Copper | 56.2 | 56.2 J | FDP |
| 205113 | SW6020 | NA | TP-24-S1-2.5 | 205113-13 | Lead | 21.5 | 21.5 J | FDP |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 2-Phenylbutane (sec-Butylbenzene) | U | UJ | FDP |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Tetrachloroethene | U | UJ | FDP |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Trichloroethene | 0.015 | 0.015 J | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | 1-Methylnaphthalene | 0.14 | 0.14 J | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | 1-Methylnaphthalene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | 2-Methylnaphthalene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | 2-Methylnaphthalene | 0.042 | 0.042 J | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | Chrysene | 0.035 | 0.035 J | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | Chrysene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | Fluorene | 0.042 | 0.042 J | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | Fluorene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | Naphthalene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | Naphthalene | U | UJ | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | Pyrene | 0.049 | 0.049 J | FDP |
| 205113 | SW8270E | NA | TP-24-S1-2.5 | 205113-13 | Pyrene | U | UJ | FDP |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Methylene chloride (Dichloromethane) | 1.1 | 1.1 J, LC | FDP, LCS |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,2,4-Trimethylbenzene | U | UJ | FDP, SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Ethylbenzene | 0.0076 | 0.0076 J- | FDP, SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Naphthalene | 0.047 | 0.047 J- | FDP, SUR |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
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| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | m,p-Xylenes | 0.023 | 0.023 J- | FDP, SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | o-Xylene | 0.0075 | 0.0075 J- | FDP, SUR |
| 205113 | NWTPH-VPH | NA | TP-24-S1-2.5 | 205113-13 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 22.3 | 22.3 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S1-2.5 | 205113-13 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 70.3 | 70.3 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S1-2.5 | 205113-13 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S1-2.5 | 205113-13 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S1-2.5 | 205113-13 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S1-2.5 | 205113-13 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 5.88 | 5.88 J | HTQ |
| 205113 | NWEPH | NA | TP-24-S1-2.5 | 205113-13 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | 239 | 239 J+ | MBK |
| 205113 | SW6020 | NA | TP-24-S1-2.5 | 205113-13 | Arsenic | 4.33 | 4.33 J | MSD |
| 205113 | SW6020 | NA | TP-24-S1-2.5 | 205113-13 | Chromium | 10.9 | 10.9 J | MSD |
| 205113 | SW6020 | NA | TP-24-S1-2.5 | 205113-13 | Selenium | U | UJ | MSD |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,1,1,2-Tetrachloroethane | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,1,2,2-Tetrachloroethane | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,2,3-Trichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,2,3-Trichloropropane | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,2,4-Trichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,2-Dibromo-3-chloropropane (DBCP) | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,2-Dichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,3,5-Trimethylbenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,3-Dichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 1,4-Dichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 2-Chlorotoluene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | 4-Chlorotoluene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Bromobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Bromoform | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Chlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Hexachlorobutadiene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Isopropylbenzene (Cumene) | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | Styrene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | n-Propylbenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-24-S1-2.5 | 205113-13 | tert-Butylbenzene | U | UJ | SUR |
| 205113 | NWTPH-VPH | NA | TP-24-S2-5 | 205113-15 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S2-5 | 205113-15 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 1.02 | 1.02 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S2-5 | 205113-15 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 25.2 | 25.2 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S2-5 | 205113-15 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | NWTPH-VPH | NA | TP-24-S2-5 | 205113-15 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S2-5 | 205113-15 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-24-S2-5 | 205113-15 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | SW8260D | NA | TP-24-S2-5 | 205113-15 | Methylene chloride (Dichloromethane) | 1.4 | 1.4 J, LC | LCS |
| 205113 | NWTPH-VPH | NA | TP-25-S1-2.5 | 205113-18 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-25-S1-2.5 | 205113-18 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-25-S1-2.5 | 205113-18 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-25-S1-2.5 | 205113-18 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-25-S1-2.5 | 205113-18 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-25-S1-2.5 | 205113-18 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-25-S1-2.5 | 205113-18 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | SW6020 | NA | TP-25-S2-5 | 205113-19 | Arsenic | 1.24 | 1.24 J | MSD |
| 205113 | SW6020 | NA | TP-25-S2-5 | 205113-19 | Chromium | 17.7 | 17.7 J | MSD |
| 205113 | SW6020 | NA | TP-25-S2-5 | 205113-19 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-26-S1-2.5 | 205113-22 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-26-S1-2.5 | 205113-22 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 1.18 | 1.18 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-26-S1-2.5 | 205113-22 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 2.18 | 2.18 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-26-S1-2.5 | 205113-22 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-26-S1-2.5 | 205113-22 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-26-S1-2.5 | 205113-22 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-26-S1-2.5 | 205113-22 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | SW8260D | NA | TP-26-S1-2.5 | 205113-22 | Methylene chloride (Dichloromethane) | 0.97 | 0.97 J, LC | LCS |
| 205113 | SW6020 | NA | TP-26-S2-5 | 205113-23 | Arsenic | 1.45 | 1.45 J | MSD |
| 205113 | SW6020 | NA | TP-26-S2-5 | 205113-23 | Chromium | 10.2 | 10.2 J | MSD |
| 205113 | SW6020 | NA | TP-26-S2-5 | 205113-23 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-27-S1-5 | 205113-107 | Arsenic | 1.33 | 1.33 J | MSD |
| 205113 | SW6020 | NA | TP-27-S1-5 | 205113-107 | Chromium | 18 | 18 J | MSD |
| 205113 | SW6020 | NA | TP-27-S1-5 | 205113-107 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-28-S1-5 | 205113-26 | Arsenic | 1.37 | 1.37 J | MSD |
| 205113 | SW6020 | NA | TP-28-S1-5 | 205113-26 | Chromium | 22.8 | 22.8 J | MSD |
| 205113 | SW6020 | NA | TP-28-S1-5 | 205113-26 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-29-S1-5 | 205113-109 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 0.496 | 0.496 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-29-S1-5 | 205113-109 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 2.88 | 2.88 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-29-S1-5 | 205113-109 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 11.4 | 11.4 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-29-S1-5 | 205113-109 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-29-S1-5 | 205113-109 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | NWTPH-VPH | NA | TP-29-S1-5 | 205113-109 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-29-S1-5 | 205113-109 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | SW8260D | NA | TP-29-S1-5 | 205113-109 | Methylene chloride (Dichloromethane) | 0.85 | 0.85 J, LC | LCS |
| 205113 | SW6020 | NA | TP-29-S1-5 | 205113-109 | Arsenic | 1.65 | 1.65 J | MSD |
| 205113 | SW6020 | NA | TP-29-S1-5 | 205113-109 | Chromium | 17.3 | 17.3 J | MSD |
| 205113 | SW6020 | NA | TP-29-S1-5 | 205113-109 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-30-S1-5 | 205113-28 | Arsenic | 0.918 | 0.918 J | MSD |
| 205113 | SW6020 | NA | TP-30-S1-5 | 205113-28 | Chromium | 20.4 | 20.4 J | MSD |
| 205113 | SW6020 | NA | TP-30-S1-5 | 205113-28 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-31-S1-2.5 | 205113-30 | Arsenic | 1.42 | 1.42 J | MSD |
| 205113 | SW6020 | NA | TP-31-S1-2.5 | 205113-30 | Chromium | 7.44 | 7.44 J | MSD |
| 205113 | SW6020 | NA | TP-31-S1-2.5 | 205113-30 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-32-S1-2.5 | 205113-32 | Arsenic | 2.72 | 2.72 J | MSD |
| 205113 | SW6020 | NA | TP-32-S1-2.5 | 205113-32 | Chromium | 20.3 | 20.3 J | MSD |
| 205113 | SW6020 | NA | TP-32-S1-2.5 | 205113-32 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-33-S1-2.5 | 205113-34 | Arsenic | 1.47 | 1.47 J | MSD |
| 205113 | SW6020 | NA | TP-33-S1-2.5 | 205113-34 | Chromium | 8.42 | 8.42 J | MSD |
| 205113 | SW6020 | NA | TP-33-S1-2.5 | 205113-34 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-34-S1-2.5 | 205113-36 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 1630 | 1630 J+ | LCS, SUR |
| 205113 | NWEPH | NA | TP-34-S1-2.5 | 205113-36 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | 224 | 224 J+ | MBK |
| 205113 | SW6020 | NA | TP-34-S1-2.5 | 205113-36 | Arsenic | 1.95 | 1.95 J | MSD |
| 205113 | SW6020 | NA | TP-34-S1-2.5 | 205113-36 | Chromium | 13.7 | 13.7 J | MSD |
| 205113 | SW6020 | NA | TP-34-S1-2.5 | 205113-36 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-34-S1-2.5 | 205113-36 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 88 | 88 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-34-S1-2.5 | 205113-36 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 500 | 500 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-34-S1-2.5 | 205113-36 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | 17.2 | 17.2 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-34-S1-2.5 | 205113-36 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 41.3 | 41.3 J+ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,1,1,2-Tetrachloroethane | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,1,2,2-Tetrachloroethane | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,2,3-Trichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,2,3-Trichloropropane | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,2,4-Trichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,2,4-Trimethylbenzene | 1.1 | 1.1 J- | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,2-Dibromo-3-chloropropane (DBCP) | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,2-Dichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,3,5-Trimethylbenzene | U | UJ | SUR |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
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| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,3-Dichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 1,4-Dichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 2-Chlorotoluene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | 4-Chlorotoluene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | Bromobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | Bromoform | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | Chlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | Ethylbenzene | 0.0076 | 0.0076 J- | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | Hexachlorobutadiene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | Isopropylbenzene (Cumene) | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | Naphthalene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | Styrene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | m,p-Xylenes | 0.028 | 0.028 J- | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | n-Propylbenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | o-Xylene | 0.021 | 0.021 J- | SUR |
| 205113 | SW8260D | NA | TP-34-S1-2.5 | 205113-36 | tert-Butylbenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-34-S2-5 | 205113-37 | Methylene chloride (Dichloromethane) | 0.59 | 0.59 J, LC | LCS |
| 205113 | SW6020 | NA | TP-36B-S1-5 | 205113-43 | Arsenic | 3.76 | 3.76 J | MSD |
| 205113 | SW6020 | NA | TP-36B-S1-5 | 205113-43 | Chromium | 19.2 | 19.2 J | MSD |
| 205113 | SW6020 | NA | TP-36B-S1-5 | 205113-43 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-36-S1-3.5 | 205113-41 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 1030 | 1030 J | LCS |
| 205113 | NWEPH | NA | TP-36-S1-3.5 | 205113-41 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | 106 | 106 J+ | MBK |
| 205113 | SW6020 | NA | TP-36-S1-3.5 | 205113-41 | Arsenic | 3.59 | 3.59 J | MSD |
| 205113 | SW6020 | NA | TP-36-S1-3.5 | 205113-41 | Chromium | 19.9 | 19.9 J | MSD |
| 205113 | SW6020 | NA | TP-36-S1-3.5 | 205113-41 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-37-S1-2.5 | 205113-45 | Arsenic | 0.931 | 0.931 J | MSD |
| 205113 | SW6020 | NA | TP-37-S1-2.5 | 205113-45 | Chromium | 17.5 | 17.5 J | MSD |
| 205113 | SW6020 | NA | TP-37-S1-2.5 | 205113-45 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-38-S200 | 205113-113 | Arsenic | 0.697 | 0.697 J | MSD |
| 205113 | SW6020 | NA | TP-38-S200 | 205113-113 | Chromium | 14.6 | 14.6 J | MSD |
| 205113 | SW6020 | NA | TP-38-S200 | 205113-113 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-38-S2-5.0 | 205113-112 | Arsenic | 0.661 | 0.661 J | MSD |
| 205113 | SW6020 | NA | TP-38-S2-5.0 | 205113-112 | Chromium | 16.2 | 16.2 J | MSD |
| 205113 | SW6020 | NA | TP-38-S2-5.0 | 205113-112 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-39-S1-2.5 | 205113-47 | Arsenic | 0.964 | 0.964 J | MSD |
| 205113 | SW6020 | NA | TP-39-S1-2.5 | 205113-47 | Chromium | 16.9 | 16.9 J | MSD |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW6020 | NA | TP-39-S1-2.5 | 205113-47 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-40-S1-5 | 205113-49 | Arsenic | 1.08 | 1.08 J | MSD |
| 205113 | SW6020 | NA | TP-40-S1-5 | 205113-49 | Chromium | 7.48 | 7.48 J | MSD |
| 205113 | SW6020 | NA | TP-40-S1-5 | 205113-49 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-41-S1-5 | 205113-51 | Arsenic | 1.68 | 1.68 J | MSD |
| 205113 | SW6020 | NA | TP-41-S1-5 | 205113-51 | Chromium | 9.01 | 9.01 J | MSD |
| 205113 | SW6020 | NA | TP-41-S1-5 | 205113-51 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-42-S1-2.5 | 205113-114 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S1-2.5 | 205113-114 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 1.75 | 1.75 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S1-2.5 | 205113-114 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 15.6 | 15.6 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S1-2.5 | 205113-114 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S1-2.5 | 205113-114 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S1-2.5 | 205113-114 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S1-2.5 | 205113-114 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | SW6020 | NA | TP-42-S1-2.5 | 205113-114 | Arsenic | 1.77 | 1.77 J | MSD |
| 205113 | SW6020 | NA | TP-42-S1-2.5 | 205113-114 | Chromium | 11.6 | 11.6 J | MSD |
| 205113 | SW6020 | NA | TP-42-S1-2.5 | 205113-114 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-42-S2-5 | 205113 -116 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 827 | 827 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S2-5 | 205113 -116 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 22.5 | 22.5 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S2-5 | 205113 -116 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 89.5 | 89.5 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S2-5 | 205113 -116 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S2-5 | 205113 -116 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S2-5 | 205113 -116 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-42-S2-5 | 205113 -116 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 8.99 | 8.99 J | HTQ |
| 205113 | NWTPH-DX | NA | TP-43-S2-7.5 | 205113-54 | Diesel Range Organics | U | UJ | FDP |
| 205113 | NWTPH-DX | NA | TP-43-S2-7.5 | 205113-54 | PHC as Lube Oil | U | UJ | FDP |
| 205113 | NWTPH-VPH | NA | TP-43-S2-7.5 | 205113-54 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 67.4 | 67.4 J | LCS |
| 205113 | NWTPH-DX | NA | TP-43-S2-7.5B | 205113-55 | Diesel Range Organics | 340 | 340 J | FDP |
| 205113 | NWTPH-DX | NA | TP-43-S2-7.5B | 205113-55 | PHC as Lube Oil | 1100 | 1100 J | FDP |
| 205113 | SW6020 | NA | TP-43-S2-7.5B | 205113-55 | Zinc | 1120 | 1120 J | FDP |
| 205113 | SW6020 | NA | TP-43-S2-7.5B | 205113-55 | Arsenic | 3.2 | 3.2 J | MSD |
| 205113 | SW6020 | NA | TP-43-S2-7.5B | 205113-55 | Chromium | 14.6 | 14.6 J | MSD |
| 205113 | SW6020 | NA | TP-43-S2-7.5B | 205113-55 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-DX | NA | TP-43-S3-10 | 205113-56 | Diesel Range Organics | 120 | 120 J | FDP |
| 205113 | NWTPH-DX | NA | TP-43-S3-10 | 205113-56 | PHC as Lube Oil | 1100 | 1100 J | FDP |
| 205113 | SW6020 | NA | TP-43-S3-10 | 205113-56 | Lead | 42.3 | 42.3 J | FDP |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW6020 | NA | TP-43-S3-10 | 205113-56 | Zinc | 597 | 597 J | FDP |
| 205113 | SW6020 | NA | TP-43-S3-10 | 205113-56 | Arsenic | 2.44 | 2.44 J | FDP, MSD |
| 205113 | SW6020 | NA | TP-43-S3-10 | 205113-56 | Chromium | 10.6 | 10.6 J | MSD |
| 205113 | SW6020 | NA | TP-43-S3-10 | 205113-56 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-DX | NA | TP-43-S3-1000 | 205113-57 | Diesel Range Organics | U | UJ | FDP |
| 205113 | NWTPH-DX | NA | TP-43-S3-1000 | 205113-57 | PHC as Lube Oil | U | UJ | FDP |
| 205113 | SW6020 | NA | TP-43-S3-1000 | 205113-57 | Lead | 5.71 | 5.71 J | FDP |
| 205113 | SW6020 | NA | TP-43-S3-1000 | 205113-57 | Zinc | 62.9 | 62.9 J | FDP |
| 205113 | SW6020 | NA | TP-43-S3-1000 | 205113-57 | Arsenic | 1.38 | 1.38 J | FDP, MSD |
| 205113 | SW6020 | NA | TP-43-S3-1000 | 205113-57 | Chromium | 8.95 | 8.95 J | MSD |
| 205113 | SW6020 | NA | TP-43-S3-1000 | 205113-57 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-43-S4-14 | 205113-58 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 40.9 | 40.9 J | LCS |
| 205113 | NWEPH | NA | TP-43-S4-14 | 205113-58 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | 156 | 156 J+ | MBK |
| 205113 | SW6020 | NA | TP-43-S4-14 | 205113-58 | Arsenic | 1.13 | 1.13 J | MSD |
| 205113 | SW6020 | NA | TP-43-S4-14 | 205113-58 | Chromium | 10.5 | 10.5 J | MSD |
| 205113 | SW6020 | NA | TP-43-S4-14 | 205113-58 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-44-S1-5 | 205113-59 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 76.8 | 76.8 J | LCS |
| 205113 | NWEPH | NA | TP-44-S1-5 | 205113-59 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | 103 | 103 J+ | MBK |
| 205113 | NWTPH-VPH | NA | TP-44-S2-10 | 205113-60 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 189 | 189 J | LCS |
| 205113 | NWEPH | NA | TP-44-S2-10 | 205113-60 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | 129 | 129 J+ | MBK |
| 205113 | SW6020 | NA | TP-44-S2-10 | 205113-60 | Arsenic | 1.89 | 1.89 J | MSD |
| 205113 | SW6020 | NA | TP-44-S2-10 | 205113-60 | Chromium | 12 | 12 J | MSD |
| 205113 | SW6020 | NA | TP-44-S2-10 | 205113-60 | Selenium | U | UJ | MSD |
| 205113 | SW8270E | NA | TP-44-S2-10 | 205113-60 | Phenanthrene | 0.24 | 0.24 J- | SUR |
| 205113 | SW8270E | NA | TP-44-S2-10 | 205113-60 | Phenanthrene | 0.24 | 0.24 J- | SUR |
| 205113 | SW6020 | NA | TP-45-S1-5 | 205113-118 | Arsenic | 1.92 | 1.92 J | MSD |
| 205113 | SW6020 | NA | TP-45-S1-5 | 205113-118 | Chromium | 15.5 | 15.5 J | MSD |
| 205113 | SW6020 | NA | TP-45-S1-5 | 205113-118 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-46-S1-5 | 205113-62 | Arsenic | 0.557 | 0.557 J | MSD |
| 205113 | SW6020 | NA | TP-46-S1-5 | 205113-62 | Chromium | 18.3 | 18.3 J | MSD |
| 205113 | SW6020 | NA | TP-46-S1-5 | 205113-62 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-47-S1-5 | 205113-64 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 48.4 | 48.4 J | LCS |
| 205113 | SW8260D | NA | TP-47-S1-5 | 205113-64 | Methylene chloride (Dichloromethane) | 1.1 | 1.1 J, LC | LCS |
| 205113 | SW6020 | NA | TP-47-S1-5 | 205113-64 | Arsenic | 11.1 | 11.1 J | MSD |
| 205113 | SW6020 | NA | TP-47-S1-5 | 205113-64 | Chromium | 17.8 | 17.8 J | MSD |
| 205113 | SW6020 | NA | TP-47-S1-5 | 205113-64 | Selenium | U | UJ | MSD |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
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| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW6020 | NA | TP-47-S2-10 | 205113-65 | Arsenic | 2.38 | 2.38 J | MSD |
| 205113 | SW6020 | NA | TP-47-S2-10 | 205113-65 | Chromium | 7.19 | 7.19 J | MSD |
| 205113 | SW6020 | NA | TP-47-S2-10 | 205113-65 | Selenium | U | UJ | MSD |
| 205113 | SW8260D | NA | TP-48-S1-5 | 205113-67 | Methylene chloride (Dichloromethane) | 0.5 | 0.5 J, LC | LCS |
| 205113 | NWTPH-VPH | NA | TP-48-S1-5 | 205113-67 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 31.4 | 31.4 J+ | LCS, SUR |
| 205113 | NWEPH | NA | TP-48-S1-5 | 205113-67 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | 584 | 584 J+ | MBK |
| 205113 | SW6020 | NA | TP-48-S1-5 | 205113-67 | Arsenic | 2.68 | 2.68 J | MSD |
| 205113 | SW6020 | NA | TP-48-S1-5 | 205113-67 | Chromium | 23.5 | 23.5 J | MSD |
| 205113 | SW6020 | NA | TP-48-S1-5 | 205113-67 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-48-S1-5 | 205113-67 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 286 | 286 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-48-S1-5 | 205113-67 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 815 | 815 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-48-S1-5 | 205113-67 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | 126 | 126 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-48-S1-5 | 205113-67 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 212 | 212 J+ | SUR |
| 205113 | SW6020 | NA | TP-48-S1-5B | 205113-68 | Zinc | 48.4 | 48.4 J | FDP |
| 205113 | SW8260D | NA | TP-48-S1-5B | 205113-68 | Methylene chloride (Dichloromethane) | 0.52 | 0.52 J, LC | LCS |
| 205113 | SW6020 | NA | TP-48-S1-5B | 205113-68 | Arsenic | 1.39 | 1.39 J | MSD |
| 205113 | SW6020 | NA | TP-48-S1-5B | 205113-68 | Chromium | 17.5 | 17.5 J | MSD |
| 205113 | SW6020 | NA | TP-48-S1-5B | 205113-68 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-DX | NA | TP-48-S2-10 | 205113-69 | Diesel Range Organics | 370 | 370 J | FDP |
| 205113 | NWTPH-DX | NA | TP-48-S2-10 | 205113-69 | PHC as Lube Oil | 640 | 640 J | FDP |
| 205113 | NWTPH-VPH | NA | TP-48-S2-10 | 205113-69 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 43 | 43 J+ | LCS, SUR |
| 205113 | NWEPH | NA | TP-48-S2-10 | 205113-69 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | 164 | 164 J+ | MBK |
| 205113 | NWTPH-VPH | NA | TP-48-S2-10 | 205113-69 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 182 | 182 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-48-S2-10 | 205113-69 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 454 | 454 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-48-S2-10 | 205113-69 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | 118 | 118 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-48-S2-10 | 205113-69 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 171 | 171 J+ | SUR |
| 205113 | NWTPH-DX | NA | TP-48-S2-10B | 205113-127 | Diesel Range Organics | U | UJ | FDP |
| 205113 | NWTPH-DX | NA | TP-48-S2-10B | 205113-127 | PHC as Lube Oil | U | UJ | FDP |
| 205113 | SW6020 | NA | TP-48-S3-15 | 205113-70 | Arsenic | 1.11 | 1.11 J | MSD |
| 205113 | SW6020 | NA | TP-48-S3-15 | 205113-70 | Chromium | 9.33 | 9.33 J | MSD |
| 205113 | SW6020 | NA | TP-48-S3-15 | 205113-70 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-49-S1-2.5 | 205113-71 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 15.4 | 15.4 J | LCS |
| 205113 | SW8260D | NA | TP-49-S1-2.5 | 205113-71 | Methylene chloride (Dichloromethane) | 0.54 | 0.54 J, LC | LCS |
| 205113 | NWEPH | NA | TP-49-S1-2.5 | 205113-71 | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | 93.9 J | 93.9 J | MSD |
| 205113 | NWEPH | NA | TP-49-S1-2.5 | 205113-71 | Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | 63.2 J | 63.2 J | MSD |
| 205113 | NWEPH | NA | TP-49-S1-2.5 | 205113-71 | Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | 27.8 J | 27.8 J | MSD |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
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| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,1,1,2-Tetrachloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,1,1-Trichloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,1,2,2-Tetrachloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,1,2-Trichloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,1-Dichloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,1-Dichloroethene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,1-Dichloropropene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,2,3-Trichlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,2,3-Trichloropropane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,2,4-Trichlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,2,4-Trimethylbenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,2-Dibromo-3-chloropropane (DBCP) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,2-Dibromoethane (Ethylene Dibromide) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,2-Dichlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,2-Dichloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,2-Dichloropropane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,3,5-Trimethylbenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,3-Dichlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,3-Dichloropropane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 1,4-Dichlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 2,2-Dichloropropane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 2-Butanone (Methyl Ethyl Ketone) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 2-Chlorotoluene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 2-Hexanone (Methyl Butyl Ketone) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 2-Phenylbutane (sec-Butylbenzene) | 0.2 | 0.2 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 4-Chlorotoluene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Acetone | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Benzene | 0.016 | 0.016 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Bromobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Bromodichloromethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Bromoform | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Bromomethane (Methyl Bromide) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Carbon tetrachloride | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Chlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Chloroethane | U | R | HTQ |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
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| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Chloroform (Trichloromethane) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Chloromethane (Methyl Chloride) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Cymene (p-Isopropyltoluene) | 0.44 | 0.44 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Dibromochloromethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Dibromomethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Dichlorodifluoromethane (CFC-12) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Ethylbenzene | 1.2 | 1.2 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Hexachlorobutadiene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Hexane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Isopropylbenzene (Cumene) | 0.38 | 0.38 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Methyl Tert Butyl Ether (MTBE) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Naphthalene | 0.4 | 0.4 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Styrene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Tetrachloroethene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Toluene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Trichloroethene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Trichlorofluoromethane (CFC-11) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Vinyl chloride | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | cis-1,2-Dichloroethene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | cis-1,3-Dichloropropene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | m,p-Xylenes | 0.35 | 0.35 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | n-Propylbenzene | 0.59 | 0.59 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | o-Xylene | 0.13 | 0.13 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | tert-Butylbenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | trans-1,2-Dichloroethene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | trans-1,3-Dichloropropene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S2-5 | 205113-72 | Methylene chloride (Dichloromethane) | 0.55 | 0.55 J, LC | HTQ, LCS |
| 205113 | NWTPH-VPH | NA | TP-49-S2-5 | 205113-72 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 783 | 783 J+ | LCS, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S2-5 | 205113-72 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | 6.51 | 6.51 J+ | LCS, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S2-5 | 205113-72 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 92.4 | 92.4 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S2-5 | 205113-72 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 524 | 524 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S2-5 | 205113-72 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | 42.5 | 42.5 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S2-5 | 205113-72 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | 35.1 | 35.1 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S2-5 | 205113-72 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 76.1 | 76.1 J+ | SUR |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,1,1,2-Tetrachloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,1,1-Trichloroethane | U | R | HTQ |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,1,2,2-Tetrachloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,1,2-Trichloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,1-Dichloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,1-Dichloroethene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,1-Dichloropropene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,2,3-Trichlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,2,3-Trichloropropane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,2,4-Trichlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,2,4-Trimethylbenzene | 0.2 | 0.2 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,2-Dibromo-3-chloropropane (DBCP) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,2-Dibromoethane (Ethylene Dibromide) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,2-Dichlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,2-Dichloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,2-Dichloropropane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,3,5-Trimethylbenzene | 0.25 | 0.25 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,3-Dichlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,3-Dichloropropane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 1,4-Dichlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 2,2-Dichloropropane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 2-Butanone (Methyl Ethyl Ketone) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 2-Chlorotoluene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 2-Hexanone (Methyl Butyl Ketone) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 2-Phenylbutane (sec-Butylbenzene) | 0.68 | 0.68 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 4-Chlorotoluene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Acetone | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Benzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Bromobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Bromodichloromethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Bromoform | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Bromomethane (Methyl Bromide) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Carbon tetrachloride | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Chlorobenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Chloroethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Chloroform (Trichloromethane) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Chloromethane (Methyl Chloride) | U | R | HTQ |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Cymene (p-Isopropyltoluene) | 1.5 | 1.5 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Dibromochloromethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Dibromomethane | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Dichlorodifluoromethane (CFC-12) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Ethylbenzene | 3.1 | 3.1 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Hexachlorobutadiene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Hexane | 0.66 | 0.66 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Isopropylbenzene (Cumene) | 1.2 | 1.2 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Methyl Tert Butyl Ether (MTBE) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Methylene chloride (Dichloromethane) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Naphthalene | 0.67 | 0.67 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Styrene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Tetrachloroethene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Toluene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Trichloroethene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Trichlorofluoromethane (CFC-11) | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | Vinyl chloride | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | cis-1,2-Dichloroethene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | cis-1,3-Dichloropropene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | m,p-Xylenes | 0.93 | 0.93 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | n-Propylbenzene | 1.9 | 1.9 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | o-Xylene | 0.3 | 0.3 J | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | tert-Butylbenzene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | trans-1,2-Dichloroethene | U | R | HTQ |
| 205113 | SW8260D | NA | TP-49-S3-7.5 | 205113-73 | trans-1,3-Dichloropropene | U | R | HTQ |
| 205113 | NWTPH-VPH | NA | TP-49-S3-7.5 | 205113-73 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 1240 | 1240 J+ | LCS, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S3-7.5 | 205113-73 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | 14.4 | 14.4 J+ | LCS, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S3-7.5 | 205113-73 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 282 | 282 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S3-7.5 | 205113-73 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 1430 | 1430 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S3-7.5 | 205113-73 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | 160 | 160 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S3-7.5 | 205113-73 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | 191 | 191 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S3-7.5 | 205113-73 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 291 | 291 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S4-10 | 205113-74 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 955 | 955 J+ | LCS, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S4-10 | 205113-74 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | 41.3 | 41.3 J+ | LCS, SUR |
| 205113 | SW6020 | NA | TP-49-S4-10 | 205113-74 | Arsenic | 1.55 | 1.55 J | MSD |
| 205113 | SW6020 | NA | TP-49-S4-10 | 205113-74 | Chromium | 13.8 | 13.8 J | MSD |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW6020 | NA | TP-49-S4-10 | 205113-74 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-49-S4-10 | 205113-74 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 200 | 200 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S4-10 | 205113-74 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 1020 | 1020 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S4-10 | 205113-74 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | 166 | 166 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S4-10 | 205113-74 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | 156 | 156 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S4-10 | 205113-74 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 241 | 241 J+ | SUR |
| 205113 | SW8270E | NA | TP-49-S4-10 | 205113-74 | Naphthalene | 0.79 | 0.79 J+ | SUR |
| 205113 | SW8260D | NA | TP-49-S5-18 | 205113-75 | Methylene chloride (Dichloromethane) | 1.1 | 1.1 J, LC | LCS |
| 205113 | SW6020 | NA | TP-49-S5-18 | 205113-75 | Arsenic | 1.39 | 1.39 J | MSD |
| 205113 | SW6020 | NA | TP-49-S5-18 | 205113-75 | Chromium | 9.87 | 9.87 J | MSD |
| 205113 | SW6020 | NA | TP-49-S5-18 | 205113-75 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-49-S5-18 | 205113-75 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 93.8 | 93.8 J+ | MSD, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S5-18 | 205113-75 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 506 | 506 J+ | MSD, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S5-18 | 205113-75 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 576 | 576 J+ | MSD, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S5-18 | 205113-75 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | 30.8 | 30.8 J+ | MSD, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S5-18 | 205113-75 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | 109 | 109 J+ | MSD, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S5-18 | 205113-75 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | 86.2 | 86.2 J+ | MSD, SUR |
| 205113 | NWTPH-VPH | NA | TP-49-S5-18 | 205113-75 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 137 | 137 J+ | MSD, SUR |
| 205113 | SW8270E | NA | TP-49-S5-18 | 205113-75 | Naphthalene | 0.12 | 0.12 J+ | SUR |
| 205113 | NWTPH-VPH | NA | TP-51-S100-5 | 205113-123 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 75 | 75 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S100-5 | 205113-123 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 917 | 917 J | EXE, HTQ |
| 205113 | SW6020 | NA | TP-51-S100-5 | 205113-123 | Nickel | 11 | 11 J | FDP |
| 205113 | NWTPH-VPH | NA | TP-51-S100-5 | 205113-123 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 30.5 | 30.5 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S100-5 | 205113-123 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S100-5 | 205113-123 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S100-5 | 205113-123 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S100-5 | 205113-123 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 3.2 | 3.2 J | HTQ |
| 205113 | SW6020 | NA | TP-51-S100-5 | 205113-123 | Arsenic | 1.27 | 1.27 J | MSD |
| 205113 | SW6020 | NA | TP-51-S100-5 | 205113-123 | Chromium | 10.7 | 10.7 J | MSD |
| 205113 | SW6020 | NA | TP-51-S100-5 | 205113-123 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-51-S1-5 | 205113-121 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 115 | 115 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S1-5 | 205113-121 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 1160 | 1160 J | EXE, HTQ |
| 205113 | SW6020 | NA | TP-51-S1-5 | 205113-121 | Nickel | 17.5 | 17.5 J | FDP |
| 205113 | NWTPH-VPH | NA | TP-51-S1-5 | 205113-121 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 40.1 | 40.1 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S1-5 | 205113-121 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S1-5 | 205113-121 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | NWTPH-VPH | NA | TP-51-S1-5 | 205113-121 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S1-5 | 205113-121 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 4.49 | 4.49 J | HTQ |
| 205113 | SW6020 | NA | TP-51-S1-5 | 205113-121 | Arsenic | 1.75 | 1.75 J | MSD |
| 205113 | SW6020 | NA | TP-51-S1-5 | 205113-121 | Chromium | 15.6 | 15.6 J | MSD |
| 205113 | SW6020 | NA | TP-51-S1-5 | 205113-121 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-51-S2-10 | 205113-122 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S2-10 | 205113-122 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 1.57 | 1.57 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S2-10 | 205113-122 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 22.6 | 22.6 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S2-10 | 205113-122 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S2-10 | 205113-122 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S2-10 | 205113-122 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-51-S2-10 | 205113-122 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | SW8260D | NA | TP-51-S2-10 | 205113-122 | Methylene chloride (Dichloromethane) | 0.41 | 0.41 J, LC | LCS |
| 205113 | SW6020 | NA | TP-52-S1-5 | 205113-124 | Arsenic | 2.4 | 2.4 J | MSD |
| 205113 | SW6020 | NA | TP-52-S1-5 | 205113-124 | Chromium | 6.18 | 6.18 J | MSD |
| 205113 | SW6020 | NA | TP-52-S1-5 | 205113-124 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-54-S2-10 | 205113-77 | Arsenic | 1.41 | 1.41 J | MSD |
| 205113 | SW6020 | NA | TP-54-S2-10 | 205113-77 | Chromium | 12 | 12 J | MSD |
| 205113 | SW6020 | NA | TP-54-S2-10 | 205113-77 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-55-S1-2.5 | 205113-78 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 3.37 | 3.37 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S1-2.5 | 205113-78 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 2.76 | 2.76 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S1-2.5 | 205113-78 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S1-2.5 | 205113-78 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S1-2.5 | 205113-78 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S1-2.5 | 205113-78 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 5.25 | 5.25 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S1-2.5 | 205113-78 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 5.46 | 5.46 J | HTQ, LCS |
| 205113 | SW8260D | NA | TP-55-S1-2.5 | 205113-78 | Methylene chloride (Dichloromethane) | 0.68 | 0.68 J, LC | LCS |
| 205113 | SW6020 | NA | TP-55-S1-2.5 | 205113-78 | Arsenic | 1.46 | 1.46 J | MSD |
| 205113 | SW6020 | NA | TP-55-S1-2.5 | 205113-78 | Chromium | 8.79 | 8.79 J | MSD |
| 205113 | SW6020 | NA | TP-55-S1-2.5 | 205113-78 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-55-S2-5 | 205113-79 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 3 | 3 J | DUP, HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S2-5 | 205113 -79 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S2-5 | 205113 -79 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 0.941 | 0.941 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S2-5 | 205113 -79 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S2-5 | 205113 -79 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S2-5 | 205113 -79 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
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| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | NWTPH-VPH | NA | TP-55-S2-5 | 205113 -79 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S3-10 | 205113 -80 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S3-10 | 205113 -80 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S3-10 | 205113 -80 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 0.617 | 0.617 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S3-10 | 205113 -80 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S3-10 | 205113 -80 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S3-10 | 205113 -80 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S3-10 | 205113 -80 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S4-15 | 205113-81 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 126 | 126 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S4-15 | 205113-81 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 232 | 232 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S4-15 | 205113-81 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 379 | 379 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S4-15 | 205113-81 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | 95.2 | 95.2 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S4-15 | 205113-81 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 135 | 135 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S4-15 | 205113-81 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | 15 | 15 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-55-S4-15 | 205113-81 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | 83.1 | 83.1 J | HTQ |
| 205113 | SW6020 | NA | TP-55-S4-15 | 205113-81 | Arsenic | 1.56 | 1.56 J | MSD |
| 205113 | SW6020 | NA | TP-55-S4-15 | 205113-81 | Chromium | 9.6 | 9.6 J | MSD |
| 205113 | SW6020 | NA | TP-55-S4-15 | 205113-81 | Selenium | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-56-S4-15 | 205113-85 | Arsenic | 1.04 | 1.04 J | MSD |
| 205113 | SW6020 | NA | TP-56-S4-15 | 205113-85 | Chromium | 8.99 | 8.99 J | MSD |
| 205113 | SW6020 | NA | TP-56-S4-15 | 205113-85 | Selenium | U | UJ | MSD |
| 205113 | SW8260D | NA | TP-57-S1-5 | 205113-86 | Methylene chloride (Dichloromethane) | 0.56 | 0.56 J, LC | LCS |
| 205113 | SW6020 | NA | TP-57-S1-5 | 205113-86 | Arsenic | U | UJ | MSD |
| 205113 | SW6020 | NA | TP-57-S1-5 | 205113-86 | Chromium | 19.8 | 19.8 J | MSD |
| 205113 | SW6020 | NA | TP-57-S1-5 | 205113-86 | Selenium | U | UJ | MSD |
| 205113 | SW8260D | NA | TP-58-S2-5 | 205113-89 | Methylene chloride (Dichloromethane) | 2 | 2 J, LC | LCS |
| 205113 | SW6020 | NA | TP-58-S2-5 | 205113-89 | Arsenic | 1.22 | 1.22 J | MSD |
| 205113 | SW6020 | NA | TP-58-S2-5 | 205113-89 | Chromium | 15.5 | 15.5 J | MSD |
| 205113 | SW6020 | NA | TP-58-S2-5 | 205113-89 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-59-S1-5 | 205113-92 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 422 | 422 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S1-5 | 205113-92 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 25.3 | 25.3 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S1-5 | 205113-92 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 52.7 | 52.7 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S1-5 | 205113-92 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S1-5 | 205113-92 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S1-5 | 205113-92 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S1-5 | 205113-92 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 9.44 | 9.44 J | HTQ |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
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| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | SW8260D | NA | TP-59-S1-5 | 205113-92 | Methylene chloride (Dichloromethane) | 0.55 | 0.55 J, LC | LCS |
| 205113 | SW6020 | NA | TP-59-S1-5 | 205113-92 | Arsenic | 1.78 | 1.78 J | MSD |
| 205113 | SW6020 | NA | TP-59-S1-5 | 205113-92 | Chromium | 23.3 | 23.3 J | MSD |
| 205113 | SW6020 | NA | TP-59-S1-5 | 205113-92 | Selenium | U | UJ | MSD |
| 205113 | NWTPH-VPH | NA | TP-59-S2-10 | 205113-93 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | 213 | 213 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S2-10 | 205113-93 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 411 | 411 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S2-10 | 205113-93 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 1670 | 1670 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S2-10 | 205113-93 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S2-10 | 205113-93 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | 2.32 | 2.32 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S2-10 | 205113-93 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | 30.3 | 30.3 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S2-10 | 205113-93 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 69.1 | 69.1 J | HTQ |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,1,1,2-Tetrachloroethane | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,1,2,2-Tetrachloroethane | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,2,3-Trichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,2,3-Trichloropropane | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,2,4-Trichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,2,4-Trimethylbenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,2-Dibromo-3-chloropropane (DBCP) | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,2-Dichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,3,5-Trimethylbenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,3-Dichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 1,4-Dichlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 2-Chlorotoluene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | 4-Chlorotoluene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | Bromobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | Bromoform | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | Chlorobenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | Ethylbenzene | 0.015 | 0.015 J- | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | Hexachlorobutadiene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | Isopropylbenzene (Cumene) | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | Naphthalene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | Styrene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | m,p-Xylenes | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | n-Propylbenzene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | o-Xylene | U | UJ | SUR |
| 205113 | SW8260D | NA | TP-59-S2-10 | 205113-93 | tert-Butylbenzene | U | UJ | SUR |

**TABLE E-10**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|
| 205113 | NWTPH-VPH | NA | TP-59-S3-15 | 205113-94 | Volatile Petroleum Hydrocarbons (C10-C12) Aromatic | 227 | 227 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S3-15 | 205113-94 | Volatile Petroleum Hydrocarbons (C12-C13) Aromatic | 748 | 748 J | EXE, HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S3-15 | 205113-94 | Volatile Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S3-15 | 205113-94 | Volatile Petroleum Hydrocarbons (C5-C6) Aliphatic | U | UJ | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S3-15 | 205113-94 | Volatile Petroleum Hydrocarbons (C6-C8) Aliphatic | 2.04 | 2.04 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S3-15 | 205113-94 | Volatile Petroleum Hydrocarbons (C8-C10) Aliphatic | 15.6 | 15.6 J | HTQ |
| 205113 | NWTPH-VPH | NA | TP-59-S3-15 | 205113-94 | Volatile Petroleum Hydrocarbons (C8-C10) Aromatic | 42.2 | 42.2 J | HTQ |
| 205113 | SW8260D | NA | TP-59-S3-15 | 205113-94 | Methylene chloride (Dichloromethane) | 0.71 | 0.71 J, LC | LCS |
| 205113 | SW6020 | NA | TP-59-S3-15 | 205113-94 | Arsenic | 1.05 | 1.05 J | MSD |
| 205113 | SW6020 | NA | TP-59-S3-15 | 205113-94 | Chromium | 9.92 | 9.92 J | MSD |
| 205113 | SW6020 | NA | TP-59-S3-15 | 205113-94 | Selenium | U | UJ | MSD |
| 205113 | SW8260D | NA | TP-60-S1-5 | 205113-95 | Methylene chloride (Dichloromethane) | 2.6 | 2.6 J, LC | LCS |
| 205113 | SW6020 | NA | TP-60-S1-5 | 205113-95 | Arsenic | 1.68 | 1.68 J | MSD |
| 205113 | SW6020 | NA | TP-60-S1-5 | 205113-95 | Chromium | 24.5 | 24.5 J | MSD |
| 205113 | SW6020 | NA | TP-60-S1-5 | 205113-95 | Selenium | U | UJ | MSD |
| 205113 | SW8260D | NA | TP-61-S1-5 | 205113-97 | Methylene chloride (Dichloromethane) | 0.76 | 0.76 J, LC | LCS |
| 205113 | SW6020 | NA | TP-61-S1-5 | 205113-97 | Arsenic | 2.05 | 2.05 J | MSD |
| 205113 | SW6020 | NA | TP-61-S1-5 | 205113-97 | Chromium | 26.3 | 26.3 J | MSD |
| 205113 | SW6020 | NA | TP-61-S1-5 | 205113-97 | Selenium | U | UJ | MSD |

***Notes:***

*DUP = Laboratory duplicate relative percent difference exceeds limits.*

*EXE = Result exceeds the calibration range.*

*FDP = Field duplicate qualifier due to an exceedance of the specified limits.*

*HTQ = Holding time exceedance.*

*LC = Laboratory contamination.*

*LCS = Laboratory control/laboratory control spike duplicate percent recoveries or relative percent difference were outside the specified limits.*

*MBK = Method blank contamination.*

*MSD = Matrix spike/matrix spike duplicate percent recoveries or relative percent difference were outside the specified limits.*

*SUR = Surrogate percent recovery outside the specified limits.*

*J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.*

*J- = The result is an estimated quantity, but the result may be biased low.*

*J+ = The result is an estimated quantity, but the result may be biased high.*

*R = The sample results were rejected as unusable; the compound may or may not be present in the sample.*

*U = The compound was analyzed for but not detected.*

*UJ = The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.*

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

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Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

June 10, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on May 6, 2022 from the Kosmos 0202832-001, F&BI 205113 project. There are 270 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Andrew Nakahara
HNA0610R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on May 6, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos 0202832-001, F&BI 205113 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 205113 -01 | TP-16-S1-5 |
| 205113 -02 | TP-16-S2-10 |
| 205113 -03 | TP-17-S1-5 |
| 205113 -04 | TP-17-S2-10 |
| 205113 -05 | TP-17-S3-15 |
| 205113 -06 | TP-21-S1-5 |
| 205113 -07 | TP-21-S2-10 |
| 205113 -08 | TP-21-S200-10 |
| 205113 -09 | TP-21-S3-15 |
| 205113 -10 | TP-22-S1-5 |
| 205113 -11 | TP-22-S2-10 |
| 205113 -12 | TP-22-S3-15 |
| 205113 -13 | TP-24-S1-2.5 |
| 205113 -14 | TP-24-S100-2.5 |
| 205113 -15 | TP-24-S2-5 |
| 205113 -16 | TP-24-S3-10 |
| 205113 -17 | TP-24-S4-15 |
| 205113 -18 | TP-25-S1-2.5 |
| 205113 -19 | TP-25-S2-5 |
| 205113 -20 | TP-25-S3-10 |
| 205113 -21 | TP-25-S4-15 |
| 205113 -22 | TP-26-S1-2.5 |
| 205113 -23 | TP-26-S2-5 |
| 205113 -24 | TP-26-S3-10 |
| 205113 -25 | TP-26-S4-15 |
| 205113 -26 | TP-28-S1-5 |
| 205113 -27 | TP-28-S2-10 |
| 205113 -28 | TP-30-S1-5 |
| 205113 -29 | TP-30-S2-10 |
| 205113 -30 | TP-31-S1-2.5 |
| 205113 -31 | TP-31-S2-5 |
| 205113 -32 | TP-32-S1-2.5 |
| 205113 -33 | TP-32-S2-5 |
| 205113 -34 | TP-33-S1-2.5 |
| 205113 -35 | TP-33-S2-5 |
| 205113 -36 | TP-34-S1-2.5 |
| 205113 -37 | TP-34-S2-5 |

CASE NARRATIVE (continued)

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 205113 -38 | TP-34-S3-10 |
| 205113 -39 | TP-35-S1-5 |
| 205113 -40 | TP-35-S2-10 |
| 205113 -41 | TP-36-S1-3.5 |
| 205113 -42 | TP-36-S2-10.5 |
| 205113 -43 | TP-36B-S1-5 |
| 205113 -44 | TP-36B-S2-10 |
| 205113 -45 | TP-37-S1-2.5 |
| 205113 -46 | TP-37-S2-5 |
| 205113 -47 | TP-39-S1-2.5 |
| 205113 -48 | TP-39-S2-5 |
| 205113 -49 | TP-40-S1-5 |
| 205113 -50 | TP-40-S2-10 |
| 205113 -51 | TP-41-S1-5 |
| 205113 -52 | TP-41-S2-10 |
| 205113 -53 | TP-43-S1-5 |
| 205113 -54 | TP-43-S2-7.5 |
| 205113 -55 | TP-43-S2-7.5b |
| 205113 -56 | TP-43-S3-10 |
| 205113 -57 | TP-43-S3-1000 |
| 205113 -58 | TP-43-S4-14 |
| 205113 -59 | TP-44-S1-5 |
| 205113 -60 | TP-44-S2-10 |
| 205113 -61 | TP-44-S3-15 |
| 205113 -62 | TP-46-S1-5 |
| 205113 -63 | TP-46-S2-10 |
| 205113 -64 | TP-47-S1-5 |
| 205113 -65 | TP-47-S2-10 |
| 205113 -66 | TP-47-S3-15 |
| 205113 -67 | TP-48-S1-5 |
| 205113 -68 | TP-48-S1-5b |
| 205113 -69 | TP-48-S2-10 |
| 205113 -70 | TP-48-S3-15 |
| 205113 -71 | TP-49-S1-2.5 |
| 205113 -72 | TP-49-S2-5 |
| 205113 -73 | TP-49-S3-7.5 |
| 205113 -74 | TP-49-S4-10 |
| 205113 -75 | TP-49-S5-18 |
| 205113 -76 | TP-54-S1-5 |

CASE NARRATIVE (continued)

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 205113 -77 | TP-54-S2-10 |
| 205113 -78 | TP-55-S1-2.5 |
| 205113 -79 | TP-55-S2-5 |
| 205113 -80 | TP-55-S3-10 |
| 205113 -81 | TP-55-S4-15 |
| 205113 -82 | TP-56-S1-2.5 |
| 205113 -83 | TP-56-S2-5 |
| 205113 -84 | TP-56-S3-10 |
| 205113 -85 | TP-56-S4-15 |
| 205113 -86 | TP-57-S1-5 |
| 205113 -87 | TP-57-S2-10 |
| 205113 -88 | TP-58-S1-2.5 |
| 205113 -89 | TP-58-S2-5 |
| 205113 -90 | TP-58-S3-10 |
| 205113 -91 | TP-58-S4-13 |
| 205113 -92 | TP-59-S1-5 |
| 205113 -93 | TP-59-S2-10 |
| 205113 -94 | TP-59-S3-15 |
| 205113 -95 | TP-60-S1-5 |
| 205113 -96 | TP-60-S2-10 |
| 205113 -97 | TP-61-S1-5 |
| 205113 -98 | TP-61-S2-10 |
| 205113 -99 | TP-18-S1-5 |
| 205113 -100 | TP-18-S2-10 |
| 205113 -101 | TP-19-S1-5 |
| 205113 -102 | TP-19-S2-10 |
| 205113 -103 | TP-20-S1-5 |
| 205113 -104 | TP-20-S1-10 |
| 205113 -105 | TP-23-S1-5 |
| 205113 -106 | TP-23-S2-10 |
| 205113 -107 | TP-27-S1-5 |
| 205113 -108 | TP-27-S2-10 |
| 205113 -109 | TP-29-S1-5 |
| 205113 -110 | TP-29-S2-10 |
| 205113 -111 | TP-38-S1-2.5 |
| 205113 -112 | TP-38-S2-5.0 |
| 205113 -113 | TP-38-S200 |
| 205113 -114 | TP-42-S1-2.5 |
| 205113 -115 | TP-51-S3-15 |
| 205113 -116 | TP-42-S2-5 |
| 205113 -117 | TP-42-S3-10 |

CASE NARRATIVE (continued)

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 205113 -118 | TP-45-S1-5 |
| 205113 -119 | TP-45-S2-7.5 |
| 205113 -120 | TP-45-S3-10 |
| 205113 -121 | TP-51-S1-5 |
| 205113 -122 | TP-51-S2-10 |
| 205113 -123 | TP-51-S100-5 |
| 205113 -124 | TP-52-S1-5 |
| 205113 -125 | TP-52-S3-15 |
| 205113 -126 | TP-50-S1-5 |
| 205113 -127 | TP-48-S2-10B |
| 205113 -128 | TP-52-S2-10 |
| 205113 -129 | TP-53-S1-5 |
| 205113 -130 | TP-53-S2-10 |
| 205113 -131 | TP-50-S2-10 |
| 205113 -132 | TP-43-S3-1000 |

Samples TP-21-S1-5, TP-21-S2-10, TP-21-S200-10, TP-21-S3-15, TP-22-S1-5, TP-24-S1-2.5, TP-24-S100-2.5, TP-24-S2-5, TP-25-S1-2.5, TP-26-S1-2.5, TP-34-S1-2.5, TP-36-S1-3.5, TP-43-S2-7.5, TP-43-S4-14, TP-44-S1-5, TP-44-S2-10, TP-47-S1-5, TP-48-S1-5, TP-48-S2-10, TP-49-S1-2.5, TP-49-S2-5, TP-49-S3-7.5, TP-49-S4-10, TP-49-S5-18, TP-55-S1-2.5, TP-55-S2-5, TP-55-S3-10, TP-55-S4-15, TP-59-S1-5, TP-59-S2-10, TP-59-S3-15, TP-20-S1-5, TP-29-S1-5, TP-42-S1-2.5, TP-42-S2-5, TP-51-S1-5, TP-51-S2-10, TP-51-S100-5 were sent to Fremont Analytical for EPH and VPH analyses. The report is enclosed.

Several metals in the 6020B matrix spike and matrix spike duplicate failed the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

Methylene chloride was detected in the 8260D analysis of several samples. The data were flagged as due to laboratory contamination.

The 8260D calibration standard failed the acceptance criteria for several analytes. The affected data were flagged accordingly.

An 8260D internal standard failed the acceptance criteria for sample TP-61-S1-5. There was insufficient holding time to reanalyze the sample, therefore the data were flagged and reported.

CASE NARRATIVE (continued)

The 8260D relative percent difference did not meet the acceptance criteria for several compounds. The affected results were flagged accordingly.

An 8270E internal standard failed the acceptance criteria for several samples. The affected samples were diluted and reanalyzed with acceptable results. Both data sets were reported.

The 8270E sample TP-42-S1-2.5 was analyzed at a dilution due to matrix interferences. The reporting limits were raised accordingly.

The 8270E matrix spike and matrix spike duplicate failed the relative percent difference for several compounds. The laboratory control sample passed the acceptance crtieria, therefore the results were likely due to matrix inomgeneity of the source sample.

All other quality control requirements were acceptable.

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
Date Analyzed: 05/13/22, 05/16/22, 05/17/22 and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| TP-16-S2-10<br>205113-02 | <5 | 66 |
| TP-17-S3-15<br>205113-05 | <5 | 59 |
| TP-21-S1-5<br>205113-06 | 35 | 86 |
| TP-21-S2-10<br>205113-07 | <5 | 71 |
| TP-21-S200-10<br>205113-08 | 8.3 | 80 |
| TP-21-S3-15<br>205113-09 | 10 | 84 |
| TP-22-S1-5<br>205113-10 | <5 | 60 |
| TP-22-S2-10<br>205113-11 | <5 | 62 |
| TP-24-S1-2.5<br>205113-13 | 90 | 123 |
| TP-24-S100-2.5<br>205113-14 | 290 | ip |
| TP-24-S2-5<br>205113-15 | 7.8 | 73 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
Date Analyzed: 05/13/22, 05/16/22, 05/17/22 and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| TP-24-S3-10<br>205113-16 | <5 | 63 |
| TP-25-S1-2.5<br>205113-18 | <5 | 66 |
| TP-25-S2-5<br>205113-19 | <5 | 66 |
| TP-25-S4-15<br>205113-21 | <5 | 70 |
| TP-26-S1-2.5<br>205113-22 | <5 | 75 |
| TP-26-S2-5<br>205113-23 | <5 | 73 |
| TP-28-S1-5<br>205113-26 | <5 | 69 |
| TP-30-S1-5<br>205113-28 | <5 | 70 |
| TP-33-S1-2.5<br>205113-34 | <5 | 64 |
| TP-34-S1-2.5<br>205113-36 1/5 | 1,100 | ip |
| TP-34-S2-5<br>205113-37 | <5 | 87 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
Date Analyzed: 05/13/22, 05/16/22, 05/17/22 and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| TP-36-S1-3.5<br>205113-41 | 130 | 82 |
| TP-36-S2-10.5<br>205113-42 | <5 | 68 |
| TP-36B-S1-5<br>205113-43 | <5 | 72 |
| TP-37-S1-2.5<br>205113-45 | <5 | 72 |
| TP-39-S1-2.5<br>205113-47 | <5 | 68 |
| TP-40-S1-5<br>205113-49 | <5 | 65 |
| TP-41-S1-5<br>205113-51 | <5 | 66 |
| TP-43-S2-7.5<br>205113-54 | <5 | 65 |
| TP-43-S2-7.5b<br>205113-55 | <5 | 73 |
| TP-43-S4-14<br>205113-58 | 330 | ip |
| TP-44-S1-5<br>205113-59 1/5 | 860 | ip |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
Date Analyzed: 05/13/22, 05/16/22, 05/17/22 and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| TP-44-S2-10<br>205113-60 1/5 | 1,100 | ip |
| TP-44-S3-15<br>205113-61 | <5 | 91 |
| TP-46-S1-5<br>205113-62 | <5 | 70 |
| TP-47-S1-5<br>205113-64 | <5 | 65 |
| TP-47-S2-10<br>205113-65 | <5 | 93 |
| TP-48-S1-5<br>205113-67 1/5 | 2,600 | ip |
| TP-48-S1-5b<br>205113-68 | <5 | 96 |
| TP-48-S3-15<br>205113-70 | <5 | 88 |
| TP-49-S1-2.5<br>205113-71 1/5 | 93 | 136 |
| TP-49-S2-5<br>205113-72 1/10 | 390 | 130 |
| TP-49-S3-7.5<br>205113-73 1/50 | 3,800 | ip |

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**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| TP-49-S4-10<br>205113-74 1/5 | 2,200 | ip |
| TP-49-S5-18<br>205113-75 | 130 | ip |
| TP-54-S2-10<br>205113-77 | <5 | 68 |
| TP-55-S1-2.5<br>205113-78 | 44 | ip |
| TP-55-S2-5<br>205113-79 | <5 | 103 |
| TP-55-S3-10<br>205113-80 | <5 | 100 |
| TP-55-S4-15<br>205113-81 1/20 | 270 | 123 |
| TP-56-S4-15<br>205113-85 | <5 | 129 |
| TP-57-S1-5<br>205113-86 | <5 | 129 |
| TP-57-S2-10<br>205113-87 | <5 | 107 |
| TP-58-S1-2.5<br>205113-88 | <5 | 111 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
Date Analyzed: 05/13/22, 05/16/22, 05/17/22 and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| TP-58-S2-5<br>205113-89 | <5 | 101 |
| TP-58-S3-10<br>205113-90 | <5 | 96 |
| TP-58-S4-13<br>205113-91 | <5 | 98 |
| TP-59-S1-5<br>205113-92 | 59 | ip |
| TP-59-S2-10<br>205113-93 1/5 | 1,200 | ip |
| TP-59-S3-15<br>205113-94 1/5 | 680 | ip |
| TP-60-S1-5<br>205113-95 | <5 | 101 |
| TP-61-S1-5<br>205113-97 | <5 | 103 |
| TP-20-S1-5<br>205113-103 | <5 | 94 |
| TP-23-S2-10<br>205113-106 | <5 | 100 |
| TP-27-S1-5<br>205113-107 | <5 | 98 |

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**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| TP-29-S1-5<br>205113-109 | 8.5 | 107 |
| TP-29-S2-10<br>205113-110 | <5 | 65 |
| TP-38-S2-5.0<br>205113-112 | <5 | 64 |
| TP-38-S200<br>205113-113 | <5 | 63 |
| TP-42-S1-2.5<br>205113-114 | <5 | 65 |
| TP-42-S2-5<br>205113-116 | 11 | 98 |
| TP-42-S3-10<br>205113-117 | 26 | 95 |
| TP-45-S1-5<br>205113-118 | <5 | 70 |
| TP-51-S1-5<br>205113-121 | 85 | 73 |
| TP-51-S2-10<br>205113-122 | <5 | 114 |
| TP-51-S100-5<br>205113-123 | 140 | ip |

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**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| TP-52-S1-5<br>205113-124 | <5 | 104 |
| TP-50-S1-5<br>205113-126 | <5 | 102 |
| TP-48-S2-10B<br>205113-127 | 26 | ip |
| TP-53-S1-5<br>205113-129 | <5 | 64 |
| Method Blank<br>02-1113 MB | <5 | 68 |
| Method Blank<br>02-1114 MB | <5 | 67 |
| Method Blank<br>02-1115 MB | <5 | 85 |
| Method Blank<br>02-1116 MB | <5 | 85 |
| Method Blank<br>02-1117 MB | <5 | 102 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
Date Analyzed: 05/13/22, 05/16/22 and 05/17/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-16-S1-5<br>205113-01 | <50 | <250 | 110 |
| TP-16-S2-10<br>205113-02 | <50 | <250 | 113 |
| TP-17-S1-5<br>205113-03 | <50 | <250 | 112 |
| TP-17-S2-10<br>205113-04 | <50 | <250 | 101 |
| TP-17-S3-15<br>205113-05 | <50 | <250 | 103 |
| TP-21-S1-5<br>205113-06 | <50 | <250 | 100 |
| TP-21-S2-10<br>205113-07 | <50 | <250 | 102 |
| TP-21-S200-10<br>205113-08 | 160 x | <250 | 112 |
| TP-21-S3-15<br>205113-09 | <50 | <250 | 112 |
| TP-22-S1-5<br>205113-10 | <50 | <250 | 116 |
| TP-22-S2-10<br>205113-11 | <50 | <250 | 114 |
| TP-24-S1-2.5<br>205113-13 | 1,000 | 1,700 | 115 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
Date Analyzed: 05/13/22, 05/16/22 and 05/17/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-24-S100-2.5<br>205113-14 | 1,100 | 2,000 | 116 |
| TP-24-S2-5<br>205113-15 | 94 | 610 | 102 |
| TP-24-S3-10<br>205113-16 | <50 | <250 | 103 |
| TP-25-S1-2.5<br>205113-18 | <50 | <250 | 103 |
| TP-25-S2-5<br>205113-19 | <50 | <250 | 100 |
| TP-25-S4-15<br>205113-21 | <50 | <250 | 109 |
| TP-26-S1-2.5<br>205113-22 | <50 | <250 | 100 |
| TP-26-S2-5<br>205113-23 | <50 | <250 | 98 |
| TP-28-S1-5<br>205113-26 | <50 | <250 | 92 |
| TP-28-S2-10<br>205113-27 | <50 | <250 | 89 |
| TP-30-S1-5<br>205113-28 | <50 | <250 | 95 |
| TP-30-S2-10<br>205113-29 | <50 | <250 | 91 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
Date Analyzed: 05/13/22, 05/16/22 and 05/17/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-31-S1-2.5<br>205113-30 | <50 | <250 | 93 |
| TP-31-S2-5<br>205113-31 | <50 | <250 | 89 |
| TP-32-S1-2.5<br>205113-32 | <50 | <250 | 92 |
| TP-32-S2-5<br>205113-33 | <50 | <250 | 92 |
| TP-33-S1-2.5<br>205113-34 | <50 | <250 | 91 |
| TP-33-S2-5<br>205113-35 | <50 | <250 | 92 |
| TP-34-S1-2.5<br>205113-36 | 1,500 | 2,600 | 93 |
| TP-34-S2-5<br>205113-37 | <50 | <250 | 91 |
| TP-35-S1-5<br>205113-39 | <50 | <250 | 102 |
| TP-35-S2-10<br>205113-40 | <50 | <250 | 90 |
| TP-36-S1-3.5<br>205113-41 | 330 | 630 | 92 |
| TP-36-S2-10.5<br>205113-42 | <50 | <250 | 101 |

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**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-36B-S1-5<br>205113-43 | <50 | <250 | 93 |
| TP-36B-S2-10<br>205113-44 | <50 | <250 | 91 |
| TP-37-S1-2.5<br>205113-45 | <50 | <250 | 90 |
| TP-37-S2-5<br>205113-46 | <50 | <250 | 100 |
| TP-39-S1-2.5<br>205113-47 | <50 | <250 | 92 |
| TP-39-S2-5<br>205113-48 | <50 | <250 | 92 |
| TP-40-S1-5<br>205113-49 | <50 | <250 | 97 |
| TP-40-S2-10<br>205113-50 | <50 | <250 | 98 |
| TP-41-S1-5<br>205113-51 | <50 | <250 | 89 |
| TP-41-S2-10<br>205113-52 | <50 | <250 | 91 |
| TP-43-S2-7.5<br>205113-54 | <50 | <250 | 103 |
| TP-43-S2-7.5b<br>205113-55 | 340 | 1,100 | 91 |

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**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-43-S3-10<br>205113-56 | 120 x | 1,100 | 98 |
| TP-43-S3-1000<br>205113-57 | <50 | <250 | 102 |
| TP-43-S4-14<br>205113-58 | 1,100 x | 4,900 | 100 |
| TP-44-S1-5<br>205113-59 | 970 x | 9,000 | 100 |
| TP-44-S2-10<br>205113-60 | 1,500 x | 11,000 | 92 |
| TP-44-S3-15<br>205113-61 | <50 | <250 | 93 |
| TP-46-S1-5<br>205113-62 | <50 | <250 | 93 |
| TP-46-S2-10<br>205113-63 | <50 | <250 | 91 |
| TP-47-S1-5<br>205113-64 | <50 | <250 | 92 |
| TP-47-S2-10<br>205113-65 | <50 | <250 | 89 |
| TP-48-S1-5<br>205113-67 | 310 x | <250 | 97 |
| TP-48-S1-5b<br>205113-68 | <50 | <250 | 101 |

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**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-48-S2-10<br>205113-69 | 370 x | 640 | 103 |
| TP-48-S3-15<br>205113-70 | <50 | <250 | 111 |
| TP-49-S1-2.5<br>205113-71 | 3,400 | 880 | 123 |
| TP-49-S2-5<br>205113-72 | 92 x | <250 | 115 |
| TP-49-S3-7.5<br>205113-73 | 700 x | <250 | 113 |
| TP-49-S4-10<br>205113-74 | 480 x | <250 | 113 |
| TP-49-S5-18<br>205113-75 | 150 x | <250 | 112 |
| TP-54-S1-5<br>205113-76 | <50 | <250 | 117 |
| TP-54-S2-10<br>205113-77 | <50 | <250 | 120 |
| TP-55-S1-2.5<br>205113-78 | <50 | <250 | 111 |
| TP-55-S2-5<br>205113-79 | <50 | <250 | 105 |
| TP-55-S3-10<br>205113-80 | <50 | <250 | 118 |

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Date Extracted: 05/13/22
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**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-55-S4-15<br>205113-81 | 82 x | <250 | 111 |
| TP-56-S1-2.5<br>205113-82 | <50 | <250 | 113 |
| TP-56-S2-5<br>205113-83 | <50 | <250 | 114 |
| TP-56-S3-10<br>205113-84 | <50 | <250 | 113 |
| TP-56-S4-15<br>205113-85 | <50 | <250 | 122 |
| TP-57-S1-5<br>205113-86 | <50 | <250 | 113 |
| TP-57-S2-10<br>205113-87 | <50 | <250 | 102 |
| TP-58-S1-2.5<br>205113-88 | <50 | <250 | 107 |
| TP-58-S2-5<br>205113-89 | <50 | <250 | 110 |
| TP-58-S3-10<br>205113-90 | <50 | <250 | 100 |
| TP-58-S4-13<br>205113-91 | 68 x | <250 | 108 |
| TP-59-S1-5<br>205113-92 | 730 | 650 | 99 |

Date of Report: 06/10/22
Date Received: 05/06/22
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Date Analyzed: 05/13/22, 05/16/22 and 05/17/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-59-S2-10<br>205113-93 | 2,100 | 360 | 110 |
| TP-59-S3-15<br>205113-94 | 1,200 | <250 | 111 |
| TP-60-S1-5<br>205113-95 | <50 | <250 | 104 |
| TP-60-S2-10<br>205113-96 | <50 | <250 | 111 |
| TP-61-S1-5<br>205113-97 | <50 | <250 | 111 |
| TP-61-S2-10<br>205113-98 | <50 | <250 | 110 |
| TP-18-S1-5<br>205113-99 | <50 | <250 | 106 |
| TP-18-S2-10<br>205113-100 | <50 | <250 | 99 |
| TP-19-S1-5<br>205113-101 | <50 | <250 | 105 |
| TP-19-S2-10<br>205113-102 | <50 | <250 | 110 |
| TP-20-S1-5<br>205113-103 | 210 x | 1,100 | 104 |
| TP-20-S1-10<br>205113-104 | <50 | <250 | 111 |

Date of Report: 06/10/22
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Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
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**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-23-S1-5<br>205113-105 | <50 | <250 | 113 |
| TP-23-S2-10<br>205113-106 | <50 | <250 | 108 |
| TP-27-S1-5<br>205113-107 | <50 | <250 | 109 |
| TP-27-S2-10<br>205113-108 | <50 | <250 | 108 |
| TP-29-S1-5<br>205113-109 | 86 x | <250 | 115 |
| TP-29-S2-10<br>205113-110 | <50 | <250 | 112 |
| TP-38-S1-2.5<br>205113-111 | <50 | <250 | 112 |
| TP-38-S2-5.0<br>205113-112 | <50 | <250 | 102 |
| TP-38-S200<br>205113-113 | <50 | <250 | 101 |
| TP-42-S1-2.5<br>205113-114 | 1,600 x | 6,300 | 119 |
| TP-51-S3-15<br>205113-115 | <50 | <250 | 111 |
| TP-42-S2-5<br>205113-116 | 5,100 | 7,900 | 129 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
Date Analyzed: 05/13/22, 05/16/22 and 05/17/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-42-S3-10<br>205113-117 | <50 | <250 | 103 |
| TP-45-S1-5<br>205113-118 | <50 | <250 | 117 |
| TP-45-S3-10<br>205113-120 | <50 | <250 | 113 |
| TP-51-S1-5<br>205113-121 | 2,100 | <250 | 109 |
| TP-51-S2-10<br>205113-122 | <50 | <250 | 110 |
| TP-51-S100-5<br>205113-123 | 2,600 | <250 | 104 |
| TP-52-S1-5<br>205113-124 | <50 | <250 | 105 |
| TP-52-S3-15<br>205113-125 | <50 | <250 | 112 |
| TP-50-S1-5<br>205113-126 | <50 | <250 | 115 |
| TP-48-S2-10B<br>205113-127 | <50 | <250 | 115 |
| TP-53-S1-5<br>205113-129 | <50 | <250 | 115 |
| TP-53-S2-10<br>205113-130 | <50 | <250 | 114 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/13/22
Date Analyzed: 05/13/22, 05/16/22 and 05/17/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| TP-50-S2-10<br>205113-131 | 62 x | <250 | 113 |
| Method Blank<br>02-1193 MB | <50 | <250 | 102 |
| Method Blank<br>02-1184 MB | <50 | <250 | 92 |
| Method Blank<br>02-1194 MB | <50 | <250 | 90 |
| Method Blank<br>02-1195 MB | <50 | <250 | 89 |
| Method Blank<br>02-1196 MB | <50 | <250 | 99 |
| Method Blank<br>02-1197 MB | <50 | <250 | 110 |
| Method Blank<br>02-1198 MB | <50 | <250 | 110 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-16-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-02 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-02.074 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.31 |
| Barium | 29.3 |
| Cadmium | <1 |
| Chromium | 11.5 |
| Copper | 31.0 |
| Lead | 1.75 |
| Nickel | 10.4 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 38.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-17-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-04 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-04.077 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.22 |
| Barium | 29.8 |
| Cadmium | <1 |
| Chromium | 11.2 |
| Copper | 26.5 |
| Lead | 1.85 |
| Nickel | 9.53 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 33.0 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-21-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-07 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-07.078 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 0.879 |
| Barium | 28.4 |
| Cadmium | <1 |
| Chromium | 12.1 |
| Copper | 27.7 |
| Lead | 3.17 |
| Nickel | 9.47 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 36.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-21-S200-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-08 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-08.079 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.08 |
| Barium | 32.4 |
| Cadmium | <1 |
| Chromium | 10.9 |
| Copper | 26.3 |
| Lead | 3.35 |
| Nickel | 9.30 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 40.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-22-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-10 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-10.080 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.71 |
| Barium | 137 |
| Cadmium | <1 |
| Lead | 3.91 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-22-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-10 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-10 x5.046 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 26.5 |
| Copper | 71.6 |
| Nickel | 59.5 |
| Zinc | 64.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-24-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-13 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-13.081 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 4.33 |
| Barium | 66.7 |
| Cadmium | <1 |
| Chromium | 10.9 |
| Copper | 56.2 |
| Lead | 21.5 |
| Nickel | 20.8 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 132 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-24-S100-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-14 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-14.082 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 4.13 |
| Barium | 106 |
| Cadmium | <1 |
| Chromium | 18.1 |
| Copper | 116 |
| Lead | 157 |
| Nickel | 22.0 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 218 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-25-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-19 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-19.083 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.24 |
| Barium | 45.5 |
| Cadmium | <1 |
| Lead | 2.57 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-25-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-19 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-19 x5.047 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 17.7 |
| Copper | 54.5 |
| Nickel | 17.8 |
| Zinc | 53.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-26-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-23 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-23.086 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.45 |
| Barium | 68.0 |
| Cadmium | <1 |
| Chromium | 10.2 |
| Copper | 31.2 |
| Lead | 2.09 |
| Nickel | 8.95 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 30.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-28-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-26 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-26.087 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.37 |
| Barium | 45.2 |
| Cadmium | <1 |
| Lead | 2.66 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-28-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-26 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-26 x5.048 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 22.8 |
| Copper | 56.6 |
| Nickel | 18.5 |
| Zinc | 57.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-30-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-28 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-28.088 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 0.918 |
| Barium | 96.5 |
| Cadmium | <1 |
| Chromium | 20.4 |
| Copper | 26.0 |
| Lead | 2.58 |
| Nickel | 13.9 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 45.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-31-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-30 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-30.089 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.42 |
| Barium | 64.9 |
| Cadmium | <1 |
| Chromium | 7.44 |
| Copper | 33.7 |
| Lead | 4.44 |
| Nickel | 6.85 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 30.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-32-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-32 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-32.090 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.72 |
| Barium | 102 |
| Cadmium | <1 |
| Lead | 5.71 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-32-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-32 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-32 x5.049 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 20.3 |
| Copper | 72.1 |
| Nickel | 21.8 |
| Zinc | 52.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-33-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-34 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-34.091 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.47 |
| Barium | 43.3 |
| Cadmium | <1 |
| Chromium | 8.42 |
| Copper | 34.5 |
| Lead | 5.95 |
| Nickel | 7.73 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 48.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-34-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-36 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-36.092 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.95 |
| Barium | 71.8 |
| Cadmium | <1 |
| Chromium | 13.7 |
| Copper | 48.9 |
| Lead | 68.8 |
| Nickel | 13.7 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 106 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-36-S1-3.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-41 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-41.095 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 3.59 |
| Barium | 88.8 |
| Cadmium | <1 |
| Lead | 5.48 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-36-S1-3.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-41 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-41 x5.052 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 19.9 |
| Copper | 67.9 |
| Nickel | 21.5 |
| Zinc | 262 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-36B-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-43 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-43.098 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 3.76 |
| Barium | 71.9 |
| Cadmium | <1 |
| Lead | 4.22 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-36B-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-43 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-43 x5.053 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 19.2 |
| Copper | 85.9 |
| Nickel | 21.2 |
| Zinc | 55.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-37-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-45 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-45.099 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 0.931 |
| Barium | 95.6 |
| Cadmium | <1 |
| Chromium | 17.5 |
| Copper | 38.2 |
| Lead | 5.08 |
| Nickel | 17.5 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 45.8 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-39-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-47 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-47.100 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 0.964 |
| Barium | 92.9 |
| Cadmium | <1 |
| Chromium | 16.9 |
| Copper | 47.8 |
| Lead | 4.35 |
| Nickel | 16.2 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 37.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-40-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-49 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-49.101 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.08 |
| Barium | 21.1 |
| Cadmium | <1 |
| Chromium | 7.48 |
| Copper | 32.9 |
| Lead | 3.00 |
| Nickel | 7.42 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 37.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-41-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-51 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-51.102 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.68 |
| Barium | 44.3 |
| Cadmium | <1 |
| Chromium | 9.01 |
| Copper | 45.3 |
| Lead | 9.59 |
| Nickel | 8.81 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 47.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-43-S2-7.5b | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-55 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-55.105 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 3.20 |
| Barium | 50.1 |
| Cadmium | 1.35 |
| Chromium | 14.6 |
| Copper | 74.6 |
| Lead | 83.4 |
| Nickel | 15.4 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-43-S2-7.5b | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-55 x10 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-55 x10.054 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Zinc | 1,120 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-43-S3-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-56 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-56.106 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.44 |
| Barium | 48.5 |
| Cadmium | <1 |
| Chromium | 10.6 |
| Copper | 50.6 |
| Lead | 42.3 |
| Nickel | 14.4 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-43-S3-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-56 x10 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-56 x10.055 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Zinc | 597 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-43-S3-1000 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-57 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-57.107 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.38 |
| Barium | 35.5 |
| Cadmium | <1 |
| Chromium | 8.95 |
| Copper | 45.0 |
| Lead | 5.71 |
| Nickel | 14.2 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 62.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-43-S4-14 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-58 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-58.140 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.13 |
| Barium | 35.7 |
| Cadmium | <1 |
| Chromium | 10.5 |
| Copper | 38.3 |
| Lead | 15.5 |
| Nickel | 9.59 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 85.3 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-44-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-60 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-60.141 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.89 |
| Barium | 32.4 |
| Cadmium | <1 |
| Chromium | 12.0 |
| Copper | 34.3 |
| Lead | 8.51 |
| Nickel | 9.87 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 41.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-46-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-62 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-62.142 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 0.557 |
| Barium | 58.0 |
| Cadmium | <1 |
| Chromium | 18.3 |
| Copper | 52.8 |
| Lead | 3.94 |
| Nickel | 14.9 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 42.8 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-47-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-64 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-64.143 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 11.1 |
| Barium | 61.2 |
| Cadmium | <1 |
| Lead | 6.83 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-47-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-64 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-64 x5.056 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 17.8 |
| Copper | 76.0 |
| Nickel | 19.4 |
| Zinc | 53.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-47-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-65 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-65.144 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.38 |
| Barium | 25.6 |
| Cadmium | <1 |
| Chromium | 7.19 |
| Copper | 30.5 |
| Lead | 3.38 |
| Nickel | 7.56 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 36.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-48-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-67 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-67.145 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.68 |
| Barium | 70.4 |
| Cadmium | <1 |
| Lead | 4.49 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-48-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-67 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-67 x5.069 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 23.5 |
| Copper | 85.1 |
| Nickel | 22.7 |
| Zinc | 57.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-48-S1-5b | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-68 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-68.146 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.39 |
| Barium | 53.6 |
| Cadmium | <1 |
| Chromium | 17.5 |
| Copper | 56.7 |
| Lead | 3.87 |
| Nickel | 16.9 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 48.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-48-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-70 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-70.147 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.11 |
| Barium | 27.6 |
| Cadmium | <1 |
| Chromium | 9.33 |
| Copper | 34.6 |
| Lead | 3.57 |
| Nickel | 7.73 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 40.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-49-S4-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-74 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-74.148 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.55 |
| Barium | 32.9 |
| Cadmium | <1 |
| Chromium | 13.8 |
| Copper | 42.6 |
| Lead | 5.44 |
| Nickel | 12.0 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 41.0 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-49-S5-18 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-75 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-75.149 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.39 |
| Barium | 28.6 |
| Cadmium | <1 |
| Chromium | 9.87 |
| Copper | 38.5 |
| Lead | 3.65 |
| Nickel | 8.67 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 41.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-54-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-77 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-77.152 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.41 |
| Barium | 23.9 |
| Cadmium | <1 |
| Chromium | 12.0 |
| Copper | 38.8 |
| Lead | 2.62 |
| Nickel | 12.3 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 38.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-55-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-78 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-78.153 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.46 |
| Barium | 64.6 |
| Cadmium | <1 |
| Chromium | 8.79 |
| Copper | 43.1 |
| Lead | 5.17 |
| Nickel | 8.32 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 51.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-55-S4-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-81 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-81.154 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.56 |
| Barium | 44.5 |
| Cadmium | <1 |
| Chromium | 9.60 |
| Copper | 36.7 |
| Lead | 3.43 |
| Nickel | 18.0 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 32.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-56-S4-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-85 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-85.155 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.04 |
| Barium | 36.6 |
| Cadmium | <1 |
| Chromium | 8.99 |
| Copper | 41.8 |
| Lead | 3.40 |
| Nickel | 7.51 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 41.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-57-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-86 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-86.156 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <0.5 |
| Barium | 67.9 |
| Cadmium | <1 |
| Chromium | 19.8 |
| Copper | 51.1 |
| Lead | 4.10 |
| Nickel | 14.4 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 37.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-58-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-89 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-89.157 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.22 |
| Barium | 56.8 |
| Cadmium | <1 |
| Chromium | 15.5 |
| Copper | 47.1 |
| Lead | 3.44 |
| Nickel | 14.3 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 36.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-59-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-92 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-92.158 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.78 |
| Barium | 110 |
| Cadmium | <1 |
| Lead | 5.30 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-59-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-92 x5 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-92 x5.187 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 23.3 |
| Copper | 87.8 |
| Nickel | 24.5 |
| Zinc | 78.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-59-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-94 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-94.161 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.05 |
| Barium | 32.1 |
| Cadmium | <1 |
| Chromium | 9.92 |
| Copper | 40.5 |
| Lead | 4.69 |
| Nickel | 10.6 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 41.3 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-60-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-95 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-95.164 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.68 |
| Barium | 73.3 |
| Cadmium | <1 |
| Lead | 4.69 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-60-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-95 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-95 x5.070 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 24.5 |
| Copper | 76.5 |
| Nickel | 23.7 |
| Zinc | 51.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-61-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-97 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-97.165 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.05 |
| Barium | 87.2 |
| Cadmium | <1 |
| Lead | 5.08 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-61-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-97 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-97 x5.071 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 26.3 |
| Copper | 77.6 |
| Nickel | 22.4 |
| Zinc | 53.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-19-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-102 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-102.166 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.44 |
| Barium | 29.3 |
| Cadmium | <1 |
| Chromium | 11.5 |
| Copper | 28.3 |
| Lead | 2.40 |
| Nickel | 10.4 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 36.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-23-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-106 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-106.167 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 0.976 |
| Barium | 51.1 |
| Cadmium | <1 |
| Chromium | 15.0 |
| Copper | 37.7 |
| Lead | 2.92 |
| Nickel | 12.1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 40.0 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-27-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-107 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-107.168 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.33 |
| Barium | 54.3 |
| Cadmium | <1 |
| Lead | 3.28 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-27-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-107 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-107 x5.072 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 18.0 |
| Copper | 69.6 |
| Nickel | 19.5 |
| Zinc | 46.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-29-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-109 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-109.169 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.65 |
| Barium | 89.7 |
| Cadmium | <1 |
| Lead | 11.6 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-29-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-109 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-109 x5.073 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 17.3 |
| Copper | 84.1 |
| Nickel | 20.0 |
| Zinc | 64.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-38-S2-5.0 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-112 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-112.170 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 0.661 |
| Barium | 62.9 |
| Cadmium | <1 |
| Chromium | 16.2 |
| Copper | 48.4 |
| Lead | 3.82 |
| Nickel | 14.3 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 33.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-38-S200 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-113 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-113.171 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 0.697 |
| Barium | 57.1 |
| Cadmium | <1 |
| Chromium | 14.6 |
| Copper | 44.7 |
| Lead | 3.55 |
| Nickel | 12.6 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 31.3 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-42-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-114 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-114.172 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.77 |
| Barium | 34.3 |
| Cadmium | <1 |
| Chromium | 11.6 |
| Copper | 46.5 |
| Lead | 50.3 |
| Nickel | 12.0 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 111 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-45-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-118 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-118.173 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.92 |
| Barium | 55.5 |
| Cadmium | <1 |
| Lead | 3.95 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-45-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-118 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-118 x5.074 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 15.5 |
| Copper | 53.5 |
| Nickel | 15.5 |
| Zinc | 47.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-51-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-121 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-121.076 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.75 |
| Barium | 49.8 |
| Cadmium | <1 |
| Lead | 2.46 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-51-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-121 x5 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-121 x5.075 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 15.6 |
| Copper | 55.3 |
| Nickel | 17.5 |
| Zinc | 55.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-51-S100-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-123 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-123.177 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Barium | 42.1 |
| Cadmium | <1 |
| Chromium | 10.7 |
| Copper | 34.0 |
| Lead | 2.25 |
| Nickel | 11.0 |
| Silver | <1 |
| Zinc | 38.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-51-S100-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-123 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-123.077 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.27 |
| Selenium | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-52-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-124 |
| Date Analyzed: | 05/16/22 | Data File: | 205113-124.178 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Barium | 29.5 |
| Cadmium | <1 |
| Chromium | 6.18 |
| Copper | 28.9 |
| Lead | 3.83 |
| Nickel | 6.15 |
| Silver | <1 |
| Zinc | 32.0 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | TP-52-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-124 |
| Date Analyzed: | 05/17/22 | Data File: | 205113-124.078 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.40 |
| Selenium | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | I2-357 mb |
| Date Analyzed: | 05/16/22 | Data File: | I2-357 mb.063 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <0.5 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | I2-358 mb |
| Date Analyzed: | 05/16/22 | Data File: | I2-358 mb.065 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <0.5 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | I2-359 mb |
| Date Analyzed: | 05/16/22 | Data File: | I2-359 mb.093 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <0.5 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/16/22
Date Analyzed: 05/16/22, 05/17/22, and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| TP-16-S2-10<br>205113-02 | <0.1 |
| TP-17-S2-10<br>205113-04 | <0.1 |
| TP-21-S2-10<br>205113-07 | <0.1 |
| TP-21-S200-10<br>205113-08 | <0.1 |
| TP-22-S1-5<br>205113-10 | 0.25 |
| TP-24-S1-2.5<br>205113-13 | <0.1 |
| TP-24-S100-2.5<br>205113-14 | <0.1 |
| TP-25-S2-5<br>205113-19 | <0.1 |
| TP-26-S2-5<br>205113-23 | <0.1 |
| TP-28-S1-5<br>205113-26 | <0.1 |
| TP-30-S1-5<br>205113-28 | <0.1 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/16/22
Date Analyzed: 05/16/22, 05/17/22, and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| TP-31-S1-2.5<br>205113-30 | <0.1 |
| TP-32-S1-2.5<br>205113-32 | <0.1 |
| TP-33-S1-2.5<br>205113-34 | <0.1 |
| TP-34-S1-2.5<br>205113-36 | <0.1 |
| TP-36-S1-3.5<br>205113-41 | <0.1 |
| TP-36B-S1-5<br>205113-43 | <0.1 |
| TP-37-S1-2.5<br>205113-45 | <0.1 |
| TP-39-S1-2.5<br>205113-47 | <0.1 |
| TP-40-S1-5<br>205113-49 | <0.1 |
| TP-41-S1-5<br>205113-51 | <0.1 |
| TP-43-S2-7.5b<br>205113-55 | <0.1 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/16/22
Date Analyzed: 05/16/22, 05/17/22, and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| TP-43-S3-10<br>205113-56 | <0.1 |
| TP-43-S3-1000<br>205113-57 | <0.1 |
| TP-43-S4-14<br>205113-58 | <0.1 |
| TP-44-S2-10<br>205113-60 | <0.1 |
| TP-46-S1-5<br>205113-62 | <0.1 |
| TP-47-S1-5<br>205113-64 | <0.1 |
| TP-47-S2-10<br>205113-65 | <0.1 |
| TP-48-S1-5<br>205113-67 | <0.1 |
| TP-48-S1-5b<br>205113-68 | <0.1 |
| TP-48-S3-15<br>205113-70 | <0.1 |
| TP-49-S4-10<br>205113-74 | <0.1 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/16/22
Date Analyzed: 05/16/22, 05/17/22, and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| TP-49-S5-18<br>205113-75 | <0.1 |
| TP-54-S2-10<br>205113-77 | <0.1 |
| TP-55-S1-2.5<br>205113-78 | <0.1 |
| TP-55-S4-15<br>205113-81 | <0.1 |
| TP-56-S4-15<br>205113-85 | <0.1 |
| TP-57-S1-5<br>205113-86 | <0.1 |
| TP-58-S2-5<br>205113-89 | <0.1 |
| TP-59-S1-5<br>205113-92 | <0.1 |
| TP-59-S3-15<br>205113-94 | <0.1 |
| TP-60-S1-5<br>205113-95 | <0.1 |
| TP-61-S1-5<br>205113-97 | <0.1 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/16/22
Date Analyzed: 05/16/22, 05/17/22, and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| TP-19-S2-10<br>205113-102 | <0.1 |
| TP-23-S2-10<br>205113-106 | <0.1 |
| TP-27-S1-5<br>205113-107 | <0.1 |
| TP-29-S1-5<br>205113-109 | <0.1 |
| TP-38-S2-5.0<br>205113-112 | <0.1 |
| TP-38-S200<br>205113-113 | <0.1 |
| TP-42-S1-2.5<br>205113-114 | <0.1 |
| TP-45-S1-5<br>205113-118 | <0.1 |
| TP-51-S1-5<br>205113-121 | <0.1 |
| TP-51-S100-5<br>205113-123 | <0.1 |
| TP-52-S1-5<br>205113-124 | <0.1 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113
Date Extracted: 05/16/22
Date Analyzed: 05/16/22, 05/17/22, and 05/18/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| Method Blank<br>i2-357 MB | <0.1 |
| Method Blank<br>i2-358 MB | <0.1 |
| Method Blank<br>i2-359 MB | <0.1 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-21-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-07 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051759.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 79 | 128 |
| Toluene-d8 | 107 | 84 | 121 |
| 4-Bromofluorobenzene | 92 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0073 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.83 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | 0.0030 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-21-S200-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-08 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051760.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | 79 | 128 |
| Toluene-d8 | 100 | 84 | 121 |
| 4-Bromofluorobenzene | 91 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0064 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.79 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-21-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-09 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051761.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 108 | 79 | 128 |
| Toluene-d8 | 113 | 84 | 121 |
| 4-Bromofluorobenzene | 94 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.066 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.053 |
| Hexane | <0.5 | o-Xylene | 0.021 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.20 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-22-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-10 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051818.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 119 | 79 | 128 |
| Toluene-d8 | 95 | 84 | 121 |
| 4-Bromofluorobenzene | 98 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.48 lc ca | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-24-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-13 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051763.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 110 | 79 | 128 |
| Toluene-d8 | 104 | 84 | 121 |
| 4-Bromofluorobenzene | 77 ip | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0076 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.023 |
| Hexane | <0.5 | o-Xylene | 0.0075 |
| Methylene chloride | 1.1 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | 0.0034 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | 0.0029 | sec-Butylbenzene | <0.1 |
| Trichloroethene | 0.015 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.047 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-24-S100-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-14 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051820.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 106 | 79 | 128 |
| Toluene-d8 | 95 | 84 | 121 |
| 4-Bromofluorobenzene | 88 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | 0.0074 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0050 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | 0.0032 |
| Methylene chloride | 2.8 lc ca | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | 0.10 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | 0.20 ca |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | 0.62 |
| Benzene | <0.002 | sec-Butylbenzene | 0.23 ca |
| Trichloroethene | 0.0029 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-24-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-15 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051821.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 79 | 128 |
| Toluene-d8 | 92 | 84 | 121 |
| 4-Bromofluorobenzene | 96 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | 0.0026 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 1.4 lc ca | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-25-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-18 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051822.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 108 | 79 | 128 |
| Toluene-d8 | 93 | 84 | 121 |
| 4-Bromofluorobenzene | 93 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-26-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-22 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051767.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 79 | 128 |
| Toluene-d8 | 106 | 84 | 121 |
| 4-Bromofluorobenzene | 87 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | 0.0030 |
| Methylene chloride | 0.97 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-34-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-36 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051631.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 109 ca | 79 | 128 |
| Toluene-d8 | 106 | 84 | 121 |
| 4-Bromofluorobenzene | 76 ip | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0076 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.028 |
| Hexane | <0.5 | o-Xylene | 0.021 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | 1.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | 0.54 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-34-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-37 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051613.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 ca | 78 | 126 |
| Toluene-d8 | 97 | 84 | 115 |
| 4-Bromofluorobenzene | 98 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.59 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-36-S1-3.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-41 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051610.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 ca | 78 | 126 |
| Toluene-d8 | 95 | 84 | 115 |
| 4-Bromofluorobenzene | 92 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-36B-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-43 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051614.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 ca | 78 | 126 |
| Toluene-d8 | 99 | 84 | 115 |
| 4-Bromofluorobenzene | 103 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-43-S3-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-56 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051615.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 ca | 78 | 126 |
| Toluene-d8 | 97 | 84 | 115 |
| 4-Bromofluorobenzene | 102 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.0066 |
| Hexane | <0.5 | o-Xylene | 0.0020 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-43-S3-1000 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-57 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051616.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 ca | 78 | 126 |
| Toluene-d8 | 97 | 84 | 115 |
| 4-Bromofluorobenzene | 100 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.011 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-43-S4-14 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-58 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051617.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 ca | 78 | 126 |
| Toluene-d8 | 101 | 84 | 115 |
| 4-Bromofluorobenzene | 105 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0042 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.0065 |
| Hexane | <0.5 | o-Xylene | 0.014 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | 0.10 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-44-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-60 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051618.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 ca | 78 | 126 |
| Toluene-d8 | 112 | 84 | 115 |
| 4-Bromofluorobenzene | 104 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.015 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.012 |
| Hexane | <0.5 | o-Xylene | 0.24 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | 0.70 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | 1.2 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | 0.42 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | 4.9 |
| Benzene | <0.002 | sec-Butylbenzene | 1.4 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | 0.18 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-44-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-61 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051619.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 ca | 78 | 126 |
| Toluene-d8 | 101 | 84 | 115 |
| 4-Bromofluorobenzene | 103 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-47-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-64 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051620.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 112 ca | 78 | 126 |
| Toluene-d8 | 97 | 84 | 115 |
| 4-Bromofluorobenzene | 101 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | 0.0052 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0025 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.0060 |
| Hexane | <0.5 | o-Xylene | 0.0023 |
| Methylene chloride | 1.1 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | 0.0031 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-47-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-65 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051621.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 ca | 79 | 128 |
| Toluene-d8 | 90 | 84 | 121 |
| 4-Bromofluorobenzene | 98 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-48-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-67 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051622.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 106 | 79 | 128 |
| Toluene-d8 | 86 | 84 | 121 |
| 4-Bromofluorobenzene | 90 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.50 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | 0.36 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-48-S1-5b | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-68 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051623.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 ca | 79 | 128 |
| Toluene-d8 | 93 | 84 | 121 |
| 4-Bromofluorobenzene | 103 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.52 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-48-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-70 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051624.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 ca | 79 | 128 |
| Toluene-d8 | 92 | 84 | 121 |
| 4-Bromofluorobenzene | 99 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-49-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-71 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051625.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 109 ca | 79 | 128 |
| Toluene-d8 | 100 | 84 | 121 |
| 4-Bromofluorobenzene | 100 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.27 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.60 |
| Hexane | <0.5 | o-Xylene | 0.37 |
| Methylene chloride | 0.54 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | 0.13 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | 0.41 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | 1.6 |
| Benzene | 0.13 | sec-Butylbenzene | <0.1 |
| Trichloroethene | 0.0070 | p-Isopropyltoluene | 0.17 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.68 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-49-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-72 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051814.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 79 | 128 |
| Toluene-d8 | 94 | 84 | 121 |
| 4-Bromofluorobenzene | 94 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 1.2 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.35 |
| Hexane | <0.5 | o-Xylene | 0.13 |
| Methylene chloride | 0.55 lc ca | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | 0.38 ca |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | 0.59 ca |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | 0.016 | sec-Butylbenzene | 0.20 ca |
| Trichloroethene | <0.002 | p-Isopropyltoluene | 0.44 ca |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.40 ca |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-49-S3-7.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-73 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051815.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 79 | 128 |
| Toluene-d8 | 95 | 84 | 121 |
| 4-Bromofluorobenzene | 107 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 3.1 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.93 |
| Hexane | 0.66 lc ca | o-Xylene | 0.30 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | 1.2 ca |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | 1.9 ca |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | 0.25 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | 0.20 |
| Benzene | <0.002 | sec-Butylbenzene | 0.68 ca |
| Trichloroethene | <0.002 | p-Isopropyltoluene | 1.5 ca |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.67 ca |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-49-S4-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-74 1/0.5 |
| Date Analyzed: | 05/17/22 | Data File: | 051736.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 79 | 128 |
| Toluene-d8 | 113 | 84 | 121 |
| 4-Bromofluorobenzene | 115 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | 0.0036 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.60 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 1.7 |
| Hexane | 6.4 lc | o-Xylene | 0.20 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | 1.7 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | 2.5 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | 3.4 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | 5.8 |
| Benzene | 0.037 | sec-Butylbenzene | 0.81 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | 1.3 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 1.7 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-49-S5-18 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-75 1/0.5 |
| Date Analyzed: | 05/17/22 | Data File: | 051737.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | 79 | 128 |
| Toluene-d8 | 105 | 84 | 121 |
| 4-Bromofluorobenzene | 103 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | 0.0057 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.10 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.087 |
| Hexane | <0.5 | o-Xylene | 0.046 |
| Methylene chloride | 1.1 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | 0.14 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | 0.21 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | 0.19 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | 0.49 |
| Benzene | 0.0066 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.13 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-54-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-77 1/0.5 |
| Date Analyzed: | 05/16/22 | Data File: | 051611.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 ca | 78 | 126 |
| Toluene-d8 | 87 | 84 | 115 |
| 4-Bromofluorobenzene | 103 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-55-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-78 1/0.5 |
| Date Analyzed: | 05/17/22 | Data File: | 051742.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 79 | 128 |
| Toluene-d8 | 101 | 84 | 121 |
| 4-Bromofluorobenzene | 105 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | 0.0026 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0068 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.023 |
| Hexane | <0.5 | o-Xylene | 0.0060 |
| Methylene chloride | 0.68 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | 0.0022 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.020 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-55-S4-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-81 1/0.5 |
| Date Analyzed: | 05/17/22 | Data File: | 051743.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 112 | 79 | 128 |
| Toluene-d8 | 96 | 84 | 121 |
| 4-Bromofluorobenzene | 95 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0089 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | 0.0021 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | 0.13 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.035 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-56-S4-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-85 1/0.5 |
| Date Analyzed: | 05/17/22 | Data File: | 051744.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 79 | 128 |
| Toluene-d8 | 92 | 84 | 121 |
| 4-Bromofluorobenzene | 97 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-57-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-86 1/0.5 |
| Date Analyzed: | 05/17/22 | Data File: | 051745.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 109 | 79 | 128 |
| Toluene-d8 | 90 | 84 | 121 |
| 4-Bromofluorobenzene | 100 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.56 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-58-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-89 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051817.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 107 | 79 | 128 |
| Toluene-d8 | 89 | 84 | 121 |
| 4-Bromofluorobenzene | 99 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0027 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.0042 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 2.0 lc ca | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.020 ca |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-58-S4-13 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-91 1/0.5 |
| Date Analyzed: | 05/17/22 | Data File: | 051747.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 79 | 128 |
| Toluene-d8 | 97 | 84 | 121 |
| 4-Bromofluorobenzene | 95 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-59-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-92 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051809.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 79 | 128 |
| Toluene-d8 | 93 | 84 | 121 |
| 4-Bromofluorobenzene | 95 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.55 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-59-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-93 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051810.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 109 | 79 | 128 |
| Toluene-d8 | 92 | 84 | 121 |
| 4-Bromofluorobenzene | 67 ip | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.015 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | 0.64 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-59-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-94 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051811.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 79 | 128 |
| Toluene-d8 | 92 | 84 | 121 |
| 4-Bromofluorobenzene | 88 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.71 lc ca | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-60-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-95 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051751.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 79 | 128 |
| Toluene-d8 | 93 | 84 | 121 |
| 4-Bromofluorobenzene | 94 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 2.6 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-61-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-97 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051752.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 110 | 79 | 128 |
| Toluene-d8 | 97 | 84 | 121 |
| 4-Bromofluorobenzene | 91 J | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 J |
| Chloromethane | <1 | Tetrachloroethene | <0.002 J |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 J |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 J |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 J |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 J |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 J |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 J |
| Hexane | <0.5 | o-Xylene | <0.002 J |
| Methylene chloride | 0.76 lc | Styrene | <0.1 J |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 J |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 J |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 J |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 J |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 J |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 J |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 J |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 J |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 J |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 J |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 J |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 J |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 J |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 J |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 J |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 J |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 J |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 J |
| Toluene | <0.1 J | Hexachlorobutadiene | <0.5 J |
| trans-1,3-Dichloropropene | <0.1 J | Naphthalene | <0.01 J |
| 1,1,2-Trichloroethane | <0.1 J | 1,2,3-Trichlorobenzene | <0.5 J |
| 2-Hexanone | <1 J | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-23-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-106 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051753.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 109 | 79 | 128 |
| Toluene-d8 | 107 | 84 | 121 |
| 4-Bromofluorobenzene | 90 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-29-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-109 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051754.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 79 | 128 |
| Toluene-d8 | 102 | 84 | 121 |
| 4-Bromofluorobenzene | 92 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.85 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-42-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-114 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051755.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 79 | 128 |
| Toluene-d8 | 97 | 84 | 121 |
| 4-Bromofluorobenzene | 89 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | 0.0040 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.0088 |
| Hexane | <0.5 | o-Xylene | 0.0064 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | 0.0022 | sec-Butylbenzene | <0.1 |
| Trichloroethene | 0.0031 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.024 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-51-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-121 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051812.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 91 | 79 | 128 |
| Toluene-d8 | 90 | 84 | 121 |
| 4-Bromofluorobenzene | 90 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-51-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-122 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051757.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 79 | 128 |
| Toluene-d8 | 100 | 84 | 121 |
| 4-Bromofluorobenzene | 95 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | 0.41 lc | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | 0.016 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-51-S100-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-123 1/0.5 |
| Date Analyzed: | 05/18/22 | Data File: | 051813.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 79 | 128 |
| Toluene-d8 | 95 | 84 | 121 |
| 4-Bromofluorobenzene | 88 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <0.1 |
| Chloromethane | <1 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <0.2 | Chlorobenzene | <0.1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <0.002 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <0.1 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.004 |
| Hexane | <0.5 | o-Xylene | <0.002 |
| Methylene chloride | <0.4 | Styrene | <0.1 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.1 |
| trans-1,2-Dichloroethene | <0.004 | Bromoform | <0.1 |
| 1,1-Dichloroethane | <0.004 | n-Propylbenzene | <0.1 |
| 2,2-Dichloropropane | <0.1 | Bromobenzene | <0.1 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.1 |
| Chloroform | <0.1 | 1,1,2,2-Tetrachloroethane | <0.1 |
| 2-Butanone (MEK) | <2 | 1,2,3-Trichloropropane | <0.1 |
| 1,2-Dichloroethane (EDC) | <0.004 | 2-Chlorotoluene | <0.1 |
| 1,1,1-Trichloroethane | <0.004 | 4-Chlorotoluene | <0.1 |
| 1,1-Dichloropropene | <0.1 | tert-Butylbenzene | <0.1 |
| Carbon tetrachloride | <0.1 | 1,2,4-Trimethylbenzene | <0.1 |
| Benzene | <0.002 | sec-Butylbenzene | <0.1 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.1 |
| 1,2-Dichloropropane | <0.1 | 1,3-Dichlorobenzene | <0.1 |
| Bromodichloromethane | <0.1 | 1,4-Dichlorobenzene | <0.1 |
| Dibromomethane | <0.1 | 1,2-Dichlorobenzene | <0.1 |
| 4-Methyl-2-pentanone | <2 | 1,2-Dibromo-3-chloropropane | <1 |
| cis-1,3-Dichloropropene | <0.1 | 1,2,4-Trichlorobenzene | <0.5 |
| Toluene | <0.1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.1 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.1 | 1,2,3-Trichlorobenzene | <0.5 |
| 2-Hexanone | <1 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 02-1098 mb 1/0.25 |
| Date Analyzed: | 05/16/22 | Data File: | 051564.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 91 | 84 | 120 |
| Toluene-d8 | 101 | 73 | 128 |
| 4-Bromofluorobenzene | 99 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 02-1099 mb 1/0.25 |
| Date Analyzed: | 05/16/22 | Data File: | 051565.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 84 | 120 |
| Toluene-d8 | 103 | 73 | 128 |
| 4-Bromofluorobenzene | 96 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 02-1205 mb 1/0.25 |
| Date Analyzed: | 05/17/22 | Data File: | 051741.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 112 | 79 | 128 |
| Toluene-d8 | 100 | 84 | 121 |
| 4-Bromofluorobenzene | 95 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 02-1206 mb 1/0.25 |
| Date Analyzed: | 05/17/22 | Data File: | 051740.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 79 | 128 |
| Toluene-d8 | 93 | 84 | 121 |
| 4-Bromofluorobenzene | 101 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.05 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-17-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-04 |
| Date Analyzed: | 05/13/22 | Data File: | 051315.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 60 | 39 | 103 |
| Phenol-d6 | 66 | 48 | 109 |
| Nitrobenzene-d5 | 62 | 23 | 138 |
| 2-Fluorobiphenyl | 68 | 50 | 150 |
| 2,4,6-Tribromophenol | 72 | 40 | 127 |
| Terphenyl-d14 | 76 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 J |
| Benzo(b)fluoranthene | <0.002 J |
| Benzo(k)fluoranthene | <0.002 J |
| Indeno(1,2,3-cd)pyrene | <0.002 J |
| Dibenz(a,h)anthracene | <0.002 J |
| Benzo(g,h,i)perylene | <0.002 J |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-17-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-04 1/5 |
| Date Analyzed: | 05/23/22 | Data File: | 052306.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 55 d | 39 | 103 |
| Phenol-d6 | 61 d | 48 | 109 |
| Nitrobenzene-d5 | 60 d | 23 | 138 |
| 2-Fluorobiphenyl | 63 d | 50 | 150 |
| 2,4,6-Tribromophenol | 64 d | 40 | 127 |
| Terphenyl-d14 | 82 d | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| 2-Methylnaphthalene | <0.01 |
| 1-Methylnaphthalene | <0.01 |
| Acenaphthylene | <0.01 |
| Acenaphthene | <0.01 |
| Fluorene | <0.01 |
| Phenanthrene | <0.01 |
| Anthracene | <0.01 |
| Fluoranthene | <0.01 |
| Pyrene | <0.01 |
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Benzo(g,h,i)perylene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-21-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-07 |
| Date Analyzed: | 05/13/22 | Data File: | 051316.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 63 | 39 | 103 |
| Phenol-d6 | 71 | 48 | 109 |
| Nitrobenzene-d5 | 68 | 23 | 138 |
| 2-Fluorobiphenyl | 74 | 50 | 150 |
| 2,4,6-Tribromophenol | 78 | 40 | 127 |
| Terphenyl-d14 | 85 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | 0.0026 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-21-S200-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-08 |
| Date Analyzed: | 05/13/22 | Data File: | 051317.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 39 | 103 |
| Phenol-d6 | 72 | 48 | 109 |
| Nitrobenzene-d5 | 79 | 23 | 138 |
| 2-Fluorobiphenyl | 75 | 50 | 150 |
| 2,4,6-Tribromophenol | 85 | 40 | 127 |
| Terphenyl-d14 | 93 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.011 |
| 1-Methylnaphthalene | 0.061 |
| Acenaphthylene | <0.002 |
| Acenaphthene | 0.0027 |
| Fluorene | 0.0027 |
| Phenanthrene | 0.0026 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-21-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-09 |
| Date Analyzed: | 05/13/22 | Data File: | 051318.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 39 | 103 |
| Phenol-d6 | 71 | 48 | 109 |
| Nitrobenzene-d5 | 67 | 23 | 138 |
| 2-Fluorobiphenyl | 78 | 50 | 150 |
| 2,4,6-Tribromophenol | 83 | 40 | 127 |
| Terphenyl-d14 | 97 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | 0.0043 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-22-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-10 |
| Date Analyzed: | 05/13/22 | Data File: | 051319.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 52 | 39 | 103 |
| Phenol-d6 | 60 | 48 | 109 |
| Nitrobenzene-d5 | 57 | 23 | 138 |
| 2-Fluorobiphenyl | 66 | 50 | 150 |
| 2,4,6-Tribromophenol | 75 | 40 | 127 |
| Terphenyl-d14 | 84 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-22-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-11 |
| Date Analyzed: | 05/13/22 | Data File: | 051320.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 52 | 39 | 103 |
| Phenol-d6 | 60 | 48 | 109 |
| Nitrobenzene-d5 | 56 | 23 | 138 |
| 2-Fluorobiphenyl | 63 | 50 | 150 |
| 2,4,6-Tribromophenol | 73 | 40 | 127 |
| Terphenyl-d14 | 83 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-24-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-13 1/10 |
| Date Analyzed: | 05/18/22 | Data File: | 051813.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 51 d | 24 | 111 |
| Phenol-d6 | 68 d | 37 | 116 |
| Nitrobenzene-d5 | 88 d | 38 | 117 |
| 2-Fluorobiphenyl | 68 d | 45 | 117 |
| 2,4,6-Tribromophenol | 72 d | 11 | 158 |
| Terphenyl-d14 | 116 d | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.02 |
| 2-Methylnaphthalene | 0.042 |
| 1-Methylnaphthalene | 0.14 |
| Acenaphthylene | <0.02 |
| Acenaphthene | 0.020 |
| Fluorene | 0.042 |
| Phenanthrene | 0.032 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | 0.049 |
| Benz(a)anthracene | 0.022 |
| Chrysene | 0.035 |
| Benzo(a)pyrene | 0.040 J |
| Benzo(b)fluoranthene | <0.02 J |
| Benzo(k)fluoranthene | <0.02 J |
| Indeno(1,2,3-cd)pyrene | 0.022 J |
| Dibenz(a,h)anthracene | <0.02 J |
| Benzo(g,h,i)perylene | 0.028 J |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-24-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-13 1/100 |
| Date Analyzed: | 05/27/22 | Data File: | 052716.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 20 d | 39 | 103 |
| Phenol-d6 | 47 d | 48 | 109 |
| Nitrobenzene-d5 | 70 d | 23 | 138 |
| 2-Fluorobiphenyl | 60 d | 50 | 150 |
| 2,4,6-Tribromophenol | 0 d | 40 | 127 |
| Terphenyl-d14 | 80 d | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.2 |
| Acenaphthene | <0.2 |
| Fluorene | <0.2 |
| Phenanthrene | <0.2 |
| Anthracene | <0.2 |
| Fluoranthene | <0.2 |
| Pyrene | <0.2 |
| Benz(a)anthracene | <0.2 |
| Chrysene | <0.2 |
| Benzo(a)pyrene | <0.2 |
| Benzo(b)fluoranthene | <0.2 |
| Benzo(k)fluoranthene | <0.2 |
| Indeno(1,2,3-cd)pyrene | <0.2 |
| Dibenz(a,h)anthracene | <0.2 |
| Benzo(g,h,i)perylene | <0.2 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-24-S100-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-14 1/10 |
| Date Analyzed: | 05/18/22 | Data File: | 051814.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 49 d | 24 | 111 |
| Phenol-d6 | 67 d | 37 | 116 |
| Nitrobenzene-d5 | 61 d | 38 | 117 |
| 2-Fluorobiphenyl | 68 d | 45 | 117 |
| 2,4,6-Tribromophenol | 89 d | 11 | 158 |
| Terphenyl-d14 | 132 d | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.02 |
| 2-Methylnaphthalene | 0.020 |
| 1-Methylnaphthalene | 0.024 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | 0.096 |
| Benz(a)anthracene | 0.026 |
| Chrysene | 0.057 |
| Benzo(a)pyrene | 0.044 J |
| Benzo(b)fluoranthene | <0.02 J |
| Benzo(k)fluoranthene | <0.02 J |
| Indeno(1,2,3-cd)pyrene | 0.023 J |
| Dibenz(a,h)anthracene | <0.02 J |
| Benzo(g,h,i)perylene | 0.030 J |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-24-S100-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-14 1/100 |
| Date Analyzed: | 05/27/22 | Data File: | 052722.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 33 d | 24 | 111 |
| Phenol-d6 | 33 d | 37 | 116 |
| Nitrobenzene-d5 | 30 d | 38 | 117 |
| 2-Fluorobiphenyl | 60 d | 45 | 117 |
| 2,4,6-Tribromophenol | 60 d | 11 | 158 |
| Terphenyl-d14 | 50 d | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.2 |
| Acenaphthene | <0.2 |
| Fluorene | <0.2 |
| Phenanthrene | <0.2 |
| Anthracene | <0.2 |
| Fluoranthene | <0.2 |
| Pyrene | <0.2 |
| Benz(a)anthracene | <0.2 |
| Chrysene | <0.2 |
| Benzo(a)pyrene | <0.2 |
| Benzo(b)fluoranthene | <0.2 |
| Benzo(k)fluoranthene | <0.2 |
| Indeno(1,2,3-cd)pyrene | <0.2 |
| Dibenz(a,h)anthracene | <0.2 |
| Benzo(g,h,i)perylene | <0.2 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-24-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-15 |
| Date Analyzed: | 05/13/22 | Data File: | 051321.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 56 | 39 | 103 |
| Phenol-d6 | 64 | 48 | 109 |
| Nitrobenzene-d5 | 63 | 23 | 138 |
| 2-Fluorobiphenyl | 82 | 50 | 150 |
| 2,4,6-Tribromophenol | 89 | 40 | 127 |
| Terphenyl-d14 | 103 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-24-S3-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-16 |
| Date Analyzed: | 05/13/22 | Data File: | 051322.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 58 | 39 | 103 |
| Phenol-d6 | 66 | 48 | 109 |
| Nitrobenzene-d5 | 63 | 23 | 138 |
| 2-Fluorobiphenyl | 76 | 50 | 150 |
| 2,4,6-Tribromophenol | 87 | 40 | 127 |
| Terphenyl-d14 | 98 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-25-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 205113-19 |
| Date Analyzed: | 05/17/22 | Data File: | 051719.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 49 | 39 | 103 |
| Phenol-d6 | 60 | 48 | 109 |
| Nitrobenzene-d5 | 55 | 23 | 138 |
| 2-Fluorobiphenyl | 69 | 50 | 150 |
| 2,4,6-Tribromophenol | 88 | 40 | 127 |
| Terphenyl-d14 | 94 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-25-S4-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-21 |
| Date Analyzed: | 05/13/22 | Data File: | 051323.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 58 | 39 | 103 |
| Phenol-d6 | 68 | 48 | 109 |
| Nitrobenzene-d5 | 67 | 23 | 138 |
| 2-Fluorobiphenyl | 77 | 50 | 150 |
| 2,4,6-Tribromophenol | 84 | 40 | 127 |
| Terphenyl-d14 | 92 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-26-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-22 |
| Date Analyzed: | 05/27/22 | Data File: | 052711.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 69 | 39 | 103 |
| Phenol-d6 | 78 | 48 | 109 |
| Nitrobenzene-d5 | 77 | 23 | 138 |
| 2-Fluorobiphenyl | 83 | 50 | 150 |
| 2,4,6-Tribromophenol | 88 | 40 | 127 |
| Terphenyl-d14 | 96 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-26-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-23 |
| Date Analyzed: | 05/16/22 | Data File: | 051614.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 70 | 39 | 103 |
| Phenol-d6 | 77 | 48 | 109 |
| Nitrobenzene-d5 | 75 | 23 | 138 |
| 2-Fluorobiphenyl | 83 | 50 | 150 |
| 2,4,6-Tribromophenol | 80 | 40 | 127 |
| Terphenyl-d14 | 90 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-28-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-26 |
| Date Analyzed: | 05/16/22 | Data File: | 051609.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 39 | 103 |
| Phenol-d6 | 69 | 48 | 109 |
| Nitrobenzene-d5 | 69 | 23 | 138 |
| 2-Fluorobiphenyl | 70 | 50 | 150 |
| 2,4,6-Tribromophenol | 69 | 40 | 127 |
| Terphenyl-d14 | 84 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-30-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-28 |
| Date Analyzed: | 05/16/22 | Data File: | 051610.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 53 | 39 | 103 |
| Phenol-d6 | 59 | 48 | 109 |
| Nitrobenzene-d5 | 59 | 23 | 138 |
| 2-Fluorobiphenyl | 67 | 50 | 150 |
| 2,4,6-Tribromophenol | 65 | 40 | 127 |
| Terphenyl-d14 | 79 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-31-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-30 |
| Date Analyzed: | 05/16/22 | Data File: | 051611.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 39 | 103 |
| Phenol-d6 | 68 | 48 | 109 |
| Nitrobenzene-d5 | 69 | 23 | 138 |
| 2-Fluorobiphenyl | 75 | 50 | 150 |
| 2,4,6-Tribromophenol | 73 | 40 | 127 |
| Terphenyl-d14 | 82 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-32-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-32 |
| Date Analyzed: | 05/16/22 | Data File: | 051612.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 68 | 39 | 103 |
| Phenol-d6 | 77 | 48 | 109 |
| Nitrobenzene-d5 | 77 | 23 | 138 |
| 2-Fluorobiphenyl | 83 | 50 | 150 |
| 2,4,6-Tribromophenol | 78 | 40 | 127 |
| Terphenyl-d14 | 92 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-33-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-34 |
| Date Analyzed: | 05/16/22 | Data File: | 051613.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 63 | 39 | 103 |
| Phenol-d6 | 71 | 48 | 109 |
| Nitrobenzene-d5 | 70 | 23 | 138 |
| 2-Fluorobiphenyl | 82 | 50 | 150 |
| 2,4,6-Tribromophenol | 82 | 40 | 127 |
| Terphenyl-d14 | 90 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-34-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-36 1/5 |
| Date Analyzed: | 05/18/22 | Data File: | 051812.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 52 d | 24 | 111 |
| Phenol-d6 | 72 d | 37 | 116 |
| Nitrobenzene-d5 | 91 d | 38 | 117 |
| 2-Fluorobiphenyl | 74 d | 45 | 117 |
| 2,4,6-Tribromophenol | 85 d | 11 | 158 |
| Terphenyl-d14 | 137 d | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| 2-Methylnaphthalene | 0.091 |
| 1-Methylnaphthalene | 0.12 |
| Acenaphthylene | <0.01 |
| Acenaphthene | 0.031 |
| Fluorene | 0.051 |
| Phenanthrene | 0.056 |
| Anthracene | 0.012 |
| Fluoranthene | 0.012 |
| Pyrene | 0.052 |
| Benz(a)anthracene | <0.01 |
| Chrysene | 0.022 |
| Benzo(a)pyrene | <0.01 J |
| Benzo(b)fluoranthene | <0.01 J |
| Benzo(k)fluoranthene | <0.01 J |
| Indeno(1,2,3-cd)pyrene | <0.01 J |
| Dibenz(a,h)anthracene | <0.01 J |
| Benzo(g,h,i)perylene | <0.01 J |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-34-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-36 1/100 |
| Date Analyzed: | 05/27/22 | Data File: | 052715.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 13 d | 39 | 103 |
| Phenol-d6 | 40 d | 48 | 109 |
| Nitrobenzene-d5 | 50 d | 23 | 138 |
| 2-Fluorobiphenyl | 60 d | 50 | 150 |
| 2,4,6-Tribromophenol | 0 d | 40 | 127 |
| Terphenyl-d14 | 70 d | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.2 |
| Acenaphthene | <0.2 |
| Fluorene | <0.2 |
| Phenanthrene | <0.2 |
| Anthracene | <0.2 |
| Fluoranthene | <0.2 |
| Pyrene | <0.2 |
| Benz(a)anthracene | <0.2 |
| Chrysene | <0.2 |
| Benzo(a)pyrene | <0.2 |
| Benzo(b)fluoranthene | <0.2 |
| Benzo(k)fluoranthene | <0.2 |
| Indeno(1,2,3-cd)pyrene | <0.2 |
| Dibenz(a,h)anthracene | <0.2 |
| Benzo(g,h,i)perylene | <0.2 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-34-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-37 |
| Date Analyzed: | 05/16/22 | Data File: | 051615.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 52 | 39 | 103 |
| Phenol-d6 | 63 | 48 | 109 |
| Nitrobenzene-d5 | 61 | 23 | 138 |
| 2-Fluorobiphenyl | 70 | 50 | 150 |
| 2,4,6-Tribromophenol | 69 | 40 | 127 |
| Terphenyl-d14 | 81 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-36-S1-3.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-41 |
| Date Analyzed: | 05/16/22 | Data File: | 051616.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 44 | 39 | 103 |
| Phenol-d6 | 53 | 48 | 109 |
| Nitrobenzene-d5 | 68 | 23 | 138 |
| 2-Fluorobiphenyl | 65 | 50 | 150 |
| 2,4,6-Tribromophenol | 69 | 40 | 127 |
| Terphenyl-d14 | 95 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | 0.0048 |
| Fluorene | 0.0031 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | 0.0038 |
| Pyrene | 0.012 |
| Benz(a)anthracene | 0.0022 |
| Chrysene | 0.0054 |
| Benzo(a)pyrene | <0.002 J |
| Benzo(b)fluoranthene | <0.002 J |
| Benzo(k)fluoranthene | <0.002 J |
| Indeno(1,2,3-cd)pyrene | <0.002 J |
| Dibenz(a,h)anthracene | <0.002 J |
| Benzo(g,h,i)perylene | <0.002 J |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-36-S1-3.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-41 1/50 |
| Date Analyzed: | 05/27/22 | Data File: | 052712.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 34 d | 39 | 103 |
| Phenol-d6 | 44 d | 48 | 109 |
| Nitrobenzene-d5 | 55 d | 23 | 138 |
| 2-Fluorobiphenyl | 65 d | 50 | 150 |
| 2,4,6-Tribromophenol | 174 d | 40 | 127 |
| Terphenyl-d14 | 65 d | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.1 |
| 2-Methylnaphthalene | <0.1 |
| 1-Methylnaphthalene | <0.1 |
| Acenaphthylene | <0.1 |
| Acenaphthene | <0.1 |
| Fluorene | <0.1 |
| Phenanthrene | <0.1 |
| Anthracene | <0.1 |
| Fluoranthene | <0.1 |
| Pyrene | <0.1 |
| Benz(a)anthracene | <0.1 |
| Chrysene | <0.1 |
| Benzo(a)pyrene | <0.1 |
| Benzo(b)fluoranthene | <0.1 |
| Benzo(k)fluoranthene | <0.1 |
| Indeno(1,2,3-cd)pyrene | <0.1 |
| Dibenz(a,h)anthracene | <0.1 |
| Benzo(g,h,i)perylene | <0.1 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-36-S2-10.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-42 |
| Date Analyzed: | 05/13/22 | Data File: | 051314.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 39 | 103 |
| Phenol-d6 | 68 | 48 | 109 |
| Nitrobenzene-d5 | 67 | 23 | 138 |
| 2-Fluorobiphenyl | 78 | 50 | 150 |
| 2,4,6-Tribromophenol | 74 | 40 | 127 |
| Terphenyl-d14 | 84 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-36B-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-43 |
| Date Analyzed: | 05/16/22 | Data File: | 051617.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 58 | 39 | 103 |
| Phenol-d6 | 67 | 48 | 109 |
| Nitrobenzene-d5 | 66 | 23 | 138 |
| 2-Fluorobiphenyl | 74 | 50 | 150 |
| 2,4,6-Tribromophenol | 75 | 40 | 127 |
| Terphenyl-d14 | 82 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-37-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-45 |
| Date Analyzed: | 05/16/22 | Data File: | 051618.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 54 | 39 | 103 |
| Phenol-d6 | 63 | 48 | 109 |
| Nitrobenzene-d5 | 64 | 23 | 138 |
| 2-Fluorobiphenyl | 73 | 50 | 150 |
| 2,4,6-Tribromophenol | 74 | 40 | 127 |
| Terphenyl-d14 | 82 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-39-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-47 |
| Date Analyzed: | 05/16/22 | Data File: | 051619.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 58 | 39 | 103 |
| Phenol-d6 | 66 | 48 | 109 |
| Nitrobenzene-d5 | 66 | 23 | 138 |
| 2-Fluorobiphenyl | 74 | 50 | 150 |
| 2,4,6-Tribromophenol | 77 | 40 | 127 |
| Terphenyl-d14 | 86 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-40-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-49 |
| Date Analyzed: | 05/16/22 | Data File: | 051620.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 35 vo | 39 | 103 |
| Phenol-d6 | 42 vo | 48 | 109 |
| Nitrobenzene-d5 | 45 | 23 | 138 |
| 2-Fluorobiphenyl | 53 | 50 | 150 |
| 2,4,6-Tribromophenol | 58 | 40 | 127 |
| Terphenyl-d14 | 80 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-41-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-51 |
| Date Analyzed: | 05/16/22 | Data File: | 051621.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 62 | 39 | 103 |
| Phenol-d6 | 73 | 48 | 109 |
| Nitrobenzene-d5 | 77 | 23 | 138 |
| 2-Fluorobiphenyl | 85 | 50 | 150 |
| 2,4,6-Tribromophenol | 83 | 40 | 127 |
| Terphenyl-d14 | 93 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-43-S2-7.5b | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-55 1/10 |
| Date Analyzed: | 05/18/22 | Data File: | 051815.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 41 d | 24 | 111 |
| Phenol-d6 | 57 d | 37 | 116 |
| Nitrobenzene-d5 | 54 d | 38 | 117 |
| 2-Fluorobiphenyl | 66 d | 45 | 117 |
| 2,4,6-Tribromophenol | 73 d | 11 | 158 |
| Terphenyl-d14 | 133 d | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | 0.058 |
| 2-Methylnaphthalene | 0.30 |
| 1-Methylnaphthalene | 0.13 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | 0.041 |
| Phenanthrene | 0.18 |
| Anthracene | 0.031 |
| Fluoranthene | 0.037 |
| Pyrene | 0.20 |
| Benz(a)anthracene | 0.080 |
| Chrysene | 0.17 |
| Benzo(a)pyrene | 0.047 J |
| Benzo(b)fluoranthene | <0.02 J |
| Benzo(k)fluoranthene | <0.02 J |
| Indeno(1,2,3-cd)pyrene | <0.02 J |
| Dibenz(a,h)anthracene | <0.02 J |
| Benzo(g,h,i)perylene | 0.036 J |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-43-S2-7.5b | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-55 1/100 |
| Date Analyzed: | 05/27/22 | Data File: | 052723.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 27 d | 24 | 111 |
| Phenol-d6 | 47 d | 37 | 116 |
| Nitrobenzene-d5 | 30 d | 38 | 117 |
| 2-Fluorobiphenyl | 80 d | 45 | 117 |
| 2,4,6-Tribromophenol | 0 d | 11 | 158 |
| Terphenyl-d14 | 80 d | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | 0.27 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.2 |
| Acenaphthene | <0.2 |
| Fluorene | <0.2 |
| Phenanthrene | <0.2 |
| Anthracene | <0.2 |
| Fluoranthene | <0.2 |
| Pyrene | <0.2 |
| Benz(a)anthracene | <0.2 |
| Chrysene | <0.2 |
| Benzo(a)pyrene | <0.2 |
| Benzo(b)fluoranthene | <0.2 |
| Benzo(k)fluoranthene | <0.2 |
| Indeno(1,2,3-cd)pyrene | <0.2 |
| Dibenz(a,h)anthracene | <0.2 |
| Benzo(g,h,i)perylene | <0.2 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-43-S3-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-56 1/5 |
| Date Analyzed: | 05/18/22 | Data File: | 051810.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 33 d | 24 | 111 |
| Phenol-d6 | 52 d | 37 | 116 |
| Nitrobenzene-d5 | 50 d | 38 | 117 |
| 2-Fluorobiphenyl | 64 d | 45 | 117 |
| 2,4,6-Tribromophenol | 72 d | 11 | 158 |
| Terphenyl-d14 | 119 d | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | 0.010 |
| 2-Methylnaphthalene | 0.048 |
| 1-Methylnaphthalene | 0.019 |
| Acenaphthylene | <0.01 |
| Acenaphthene | <0.01 |
| Fluorene | <0.01 |
| Phenanthrene | 0.028 |
| Anthracene | <0.01 |
| Fluoranthene | <0.01 |
| Pyrene | 0.027 |
| Benz(a)anthracene | 0.014 |
| Chrysene | 0.026 |
| Benzo(a)pyrene | <0.01 J |
| Benzo(b)fluoranthene | <0.01 J |
| Benzo(k)fluoranthene | <0.01 J |
| Indeno(1,2,3-cd)pyrene | <0.01 J |
| Dibenz(a,h)anthracene | <0.01 J |
| Benzo(g,h,i)perylene | 0.014 J |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-43-S3-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-56 1/100 |
| Date Analyzed: | 05/27/22 | Data File: | 052713.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 0 d | 39 | 103 |
| Phenol-d6 | 27 d | 48 | 109 |
| Nitrobenzene-d5 | 0 d | 23 | 138 |
| 2-Fluorobiphenyl | 50 d | 50 | 150 |
| 2,4,6-Tribromophenol | 0 d | 40 | 127 |
| Terphenyl-d14 | 70 d | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.2 |
| Acenaphthene | <0.2 |
| Fluorene | <0.2 |
| Phenanthrene | <0.2 |
| Anthracene | <0.2 |
| Fluoranthene | <0.2 |
| Pyrene | <0.2 |
| Benz(a)anthracene | <0.2 |
| Chrysene | <0.2 |
| Benzo(a)pyrene | <0.2 |
| Benzo(b)fluoranthene | <0.2 |
| Benzo(k)fluoranthene | <0.2 |
| Indeno(1,2,3-cd)pyrene | <0.2 |
| Dibenz(a,h)anthracene | <0.2 |
| Benzo(g,h,i)perylene | <0.2 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-43-S3-1000 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-57 |
| Date Analyzed: | 05/16/22 | Data File: | 051622.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 25 vo | 39 | 103 |
| Phenol-d6 | 35 vo | 48 | 109 |
| Nitrobenzene-d5 | 46 | 23 | 138 |
| 2-Fluorobiphenyl | 65 | 50 | 150 |
| 2,4,6-Tribromophenol | 61 | 40 | 127 |
| Terphenyl-d14 | 87 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.0035 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | 0.0028 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.0021 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-43-S4-14 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-58 1/5 |
| Date Analyzed: | 05/18/22 | Data File: | 051811.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 56 d | 24 | 111 |
| Phenol-d6 | 72 d | 37 | 116 |
| Nitrobenzene-d5 | 161 d | 38 | 117 |
| 2-Fluorobiphenyl | 71 d | 45 | 117 |
| 2,4,6-Tribromophenol | 80 d | 11 | 158 |
| Terphenyl-d14 | 187 d J | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| 2-Methylnaphthalene | 0.034 |
| 1-Methylnaphthalene | 0.084 |
| Acenaphthylene | <0.01 |
| Acenaphthene | 0.036 |
| Fluorene | 0.093 |
| Phenanthrene | 0.073 |
| Anthracene | 0.033 |
| Fluoranthene | 0.073 |
| Pyrene | 0.73 J |
| Benz(a)anthracene | 0.036 J |
| Chrysene | 0.061 J |
| Benzo(a)pyrene | <0.01 J |
| Benzo(b)fluoranthene | <0.01 J |
| Benzo(k)fluoranthene | <0.01 J |
| Indeno(1,2,3-cd)pyrene | 0.043 J |
| Dibenz(a,h)anthracene | <0.01 J |
| Benzo(g,h,i)perylene | <0.01 J |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-43-S4-14 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-58 1/100 |
| Date Analyzed: | 05/27/22 | Data File: | 052714.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 33 d | 39 | 103 |
| Phenol-d6 | 60 d | 48 | 109 |
| Nitrobenzene-d5 | 140 d | 23 | 138 |
| 2-Fluorobiphenyl | 60 d | 50 | 150 |
| 2,4,6-Tribromophenol | 0 d | 40 | 127 |
| Terphenyl-d14 | 60 d | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.2 |
| Acenaphthene | <0.2 |
| Fluorene | <0.2 |
| Phenanthrene | <0.2 |
| Anthracene | <0.2 |
| Fluoranthene | <0.2 |
| Pyrene | 0.26 |
| Benz(a)anthracene | <0.2 |
| Chrysene | <0.2 |
| Benzo(a)pyrene | <0.2 |
| Benzo(b)fluoranthene | <0.2 |
| Benzo(k)fluoranthene | <0.2 |
| Indeno(1,2,3-cd)pyrene | <0.2 |
| Dibenz(a,h)anthracene | <0.2 |
| Benzo(g,h,i)perylene | <0.2 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-44-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-60 |
| Date Analyzed: | 05/18/22 | Data File: | 051809.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 37 | 24 | 111 |
| Phenol-d6 | 37 | 37 | 116 |
| Nitrobenzene-d5 | 153 ip | 38 | 117 |
| 2-Fluorobiphenyl | 58 | 45 | 117 |
| 2,4,6-Tribromophenol | 65 | 11 | 158 |
| Terphenyl-d14 | 150 J ip | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.25 |
| 1-Methylnaphthalene | 0.19 |
| Acenaphthylene | <0.002 |
| Acenaphthene | 0.026 |
| Fluorene | 0.096 |
| Phenanthrene | 0.24 |
| Anthracene | 0.018 |
| Fluoranthene | 0.012 |
| Pyrene | 0.14 J |
| Benz(a)anthracene | 0.0082 J |
| Chrysene | 0.023 J |
| Benzo(a)pyrene | <0.002 J |
| Benzo(b)fluoranthene | <0.002 J |
| Benzo(k)fluoranthene | <0.002 J |
| Indeno(1,2,3-cd)pyrene | <0.002 J |
| Dibenz(a,h)anthracene | <0.002 J |
| Benzo(g,h,i)perylene | <0.002 J |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-44-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-60 1/10 |
| Date Analyzed: | 05/27/22 | Data File: | 052708.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 39 d | 39 | 103 |
| Phenol-d6 | 73 d | 48 | 109 |
| Nitrobenzene-d5 | 117 d | 23 | 138 |
| 2-Fluorobiphenyl | 58 d | 50 | 150 |
| 2,4,6-Tribromophenol | 75 d | 40 | 127 |
| Terphenyl-d14 | 68 d | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.02 |
| 2-Methylnaphthalene | 0.26 |
| 1-Methylnaphthalene | 0.20 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | 0.088 |
| Phenanthrene | 0.24 |
| Anthracene | <0.02 |
| Fluoranthene | 0.026 |
| Pyrene | 0.059 |
| Benz(a)anthracene | <0.02 |
| Chrysene | 0.022 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.02 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-44-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-61 |
| Date Analyzed: | 05/16/22 | Data File: | 051623.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 59 | 39 | 103 |
| Phenol-d6 | 70 | 48 | 109 |
| Nitrobenzene-d5 | 67 | 23 | 138 |
| 2-Fluorobiphenyl | 81 | 50 | 150 |
| 2,4,6-Tribromophenol | 82 | 40 | 127 |
| Terphenyl-d14 | 86 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-46-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-62 |
| Date Analyzed: | 05/16/22 | Data File: | 051624.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 39 | 103 |
| Phenol-d6 | 69 | 48 | 109 |
| Nitrobenzene-d5 | 65 | 23 | 138 |
| 2-Fluorobiphenyl | 74 | 50 | 150 |
| 2,4,6-Tribromophenol | 79 | 40 | 127 |
| Terphenyl-d14 | 77 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-47-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-64 |
| Date Analyzed: | 05/17/22 | Data File: | 051625.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 39 | 103 |
| Phenol-d6 | 68 | 48 | 109 |
| Nitrobenzene-d5 | 66 | 23 | 138 |
| 2-Fluorobiphenyl | 79 | 50 | 150 |
| 2,4,6-Tribromophenol | 91 | 40 | 127 |
| Terphenyl-d14 | 92 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.0020 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-47-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-65 |
| Date Analyzed: | 05/17/22 | Data File: | 051626.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 42 | 39 | 103 |
| Phenol-d6 | 51 | 48 | 109 |
| Nitrobenzene-d5 | 55 | 23 | 138 |
| 2-Fluorobiphenyl | 67 | 50 | 150 |
| 2,4,6-Tribromophenol | 66 | 40 | 127 |
| Terphenyl-d14 | 76 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-48-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-67 |
| Date Analyzed: | 05/17/22 | Data File: | 051627.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 33 vo J | 39 | 103 |
| Phenol-d6 | 37 vo J | 48 | 109 |
| Nitrobenzene-d5 | 318 ip | 23 | 138 |
| 2-Fluorobiphenyl | 74 | 50 | 150 |
| 2,4,6-Tribromophenol | 78 | 40 | 127 |
| Terphenyl-d14 | 85 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | 0.0038 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.0062 |
| Phenanthrene | 0.0074 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.0034 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-48-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-67 1/5 |
| Date Analyzed: | 05/23/22 | Data File: | 052308.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 49 d | 39 | 103 |
| Phenol-d6 | 91 d | 48 | 109 |
| Nitrobenzene-d5 | 125 d | 23 | 138 |
| 2-Fluorobiphenyl | 76 d | 50 | 150 |
| 2,4,6-Tribromophenol | 81 d | 40 | 127 |
| Terphenyl-d14 | 88 d | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| 2-Methylnaphthalene | <0.01 |
| 1-Methylnaphthalene | <0.01 |
| Acenaphthylene | <0.01 |
| Acenaphthene | <0.01 |
| Fluorene | <0.01 |
| Phenanthrene | <0.01 |
| Anthracene | <0.01 |
| Fluoranthene | <0.01 |
| Pyrene | <0.01 |
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Benzo(g,h,i)perylene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-48-S1-5b | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-68 |
| Date Analyzed: | 05/27/22 | Data File: | 052710.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 58 | 39 | 103 |
| Phenol-d6 | 64 | 48 | 109 |
| Nitrobenzene-d5 | 64 | 23 | 138 |
| 2-Fluorobiphenyl | 70 | 50 | 150 |
| 2,4,6-Tribromophenol | 71 | 40 | 127 |
| Terphenyl-d14 | 82 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-48-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-70 |
| Date Analyzed: | 05/18/22 | Data File: | 051807.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 58 | 24 | 111 |
| Phenol-d6 | 69 | 37 | 116 |
| Nitrobenzene-d5 | 67 | 38 | 117 |
| 2-Fluorobiphenyl | 74 | 45 | 117 |
| 2,4,6-Tribromophenol | 77 | 11 | 158 |
| Terphenyl-d14 | 81 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-49-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 205113-72 |
| Date Analyzed: | 05/18/22 | Data File: | 051808.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 24 | 111 |
| Phenol-d6 | 74 | 37 | 116 |
| Nitrobenzene-d5 | 73 | 38 | 117 |
| 2-Fluorobiphenyl | 72 | 45 | 117 |
| 2,4,6-Tribromophenol | 85 | 11 | 158 |
| Terphenyl-d14 | 81 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | 0.029 |
| 2-Methylnaphthalene | 0.050 |
| 1-Methylnaphthalene | 0.036 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.0033 |
| Phenanthrene | 0.0027 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-49-S4-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-74 |
| Date Analyzed: | 05/16/22 | Data File: | 051614.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 82 | 24 | 111 |
| Phenol-d6 | 86 | 37 | 116 |
| Nitrobenzene-d5 | 196 ip | 38 | 117 |
| 2-Fluorobiphenyl | 80 | 45 | 117 |
| 2,4,6-Tribromophenol | 100 | 11 | 158 |
| Terphenyl-d14 | 93 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | 0.79 |
| 2-Methylnaphthalene | 0.52 |
| 1-Methylnaphthalene | 0.56 |
| Acenaphthylene | <0.002 |
| Acenaphthene | 0.013 |
| Fluorene | 0.020 |
| Phenanthrene | 0.020 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-49-S5-18 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-75 |
| Date Analyzed: | 05/16/22 | Data File: | 051616.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 82 | 24 | 111 |
| Phenol-d6 | 88 | 37 | 116 |
| Nitrobenzene-d5 | 142 ip | 38 | 117 |
| 2-Fluorobiphenyl | 89 | 45 | 117 |
| 2,4,6-Tribromophenol | 100 | 11 | 158 |
| Terphenyl-d14 | 99 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | 0.12 |
| 2-Methylnaphthalene | 0.14 |
| 1-Methylnaphthalene | 0.13 |
| Acenaphthylene | <0.002 |
| Acenaphthene | 0.0048 |
| Fluorene | 0.0093 |
| Phenanthrene | 0.0096 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-55-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-78 |
| Date Analyzed: | 05/16/22 | Data File: | 051617.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 59 | 24 | 111 |
| Phenol-d6 | 66 | 37 | 116 |
| Nitrobenzene-d5 | 72 | 38 | 117 |
| 2-Fluorobiphenyl | 71 | 45 | 117 |
| 2,4,6-Tribromophenol | 92 | 11 | 158 |
| Terphenyl-d14 | 87 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | 0.0023 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-55-S4-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-81 |
| Date Analyzed: | 05/16/22 | Data File: | 051618.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 66 | 24 | 111 |
| Phenol-d6 | 78 | 37 | 116 |
| Nitrobenzene-d5 | 96 | 38 | 117 |
| 2-Fluorobiphenyl | 83 | 45 | 117 |
| 2,4,6-Tribromophenol | 99 | 11 | 158 |
| Terphenyl-d14 | 100 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.039 |
| 1-Methylnaphthalene | 0.025 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-56-S4-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-85 |
| Date Analyzed: | 05/16/22 | Data File: | 051619.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 24 | 111 |
| Phenol-d6 | 70 | 37 | 116 |
| Nitrobenzene-d5 | 72 | 38 | 117 |
| 2-Fluorobiphenyl | 71 | 45 | 117 |
| 2,4,6-Tribromophenol | 88 | 11 | 158 |
| Terphenyl-d14 | 96 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-57-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-86 |
| Date Analyzed: | 05/16/22 | Data File: | 051620.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 53 | 24 | 111 |
| Phenol-d6 | 61 | 37 | 116 |
| Nitrobenzene-d5 | 56 | 38 | 117 |
| 2-Fluorobiphenyl | 67 | 45 | 117 |
| 2,4,6-Tribromophenol | 84 | 11 | 158 |
| Terphenyl-d14 | 93 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-58-S2-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-89 |
| Date Analyzed: | 05/16/22 | Data File: | 051621.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 41 | 24 | 111 |
| Phenol-d6 | 49 | 37 | 116 |
| Nitrobenzene-d5 | 49 | 38 | 117 |
| 2-Fluorobiphenyl | 57 | 45 | 117 |
| 2,4,6-Tribromophenol | 76 | 11 | 158 |
| Terphenyl-d14 | 85 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-58-S4-13 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-91 |
| Date Analyzed: | 05/16/22 | Data File: | 051622.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 49 | 24 | 111 |
| Phenol-d6 | 60 | 37 | 116 |
| Nitrobenzene-d5 | 60 | 38 | 117 |
| 2-Fluorobiphenyl | 71 | 45 | 117 |
| 2,4,6-Tribromophenol | 85 | 11 | 158 |
| Terphenyl-d14 | 91 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-59-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-92 |
| Date Analyzed: | 05/16/22 | Data File: | 051623.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 67 | 24 | 111 |
| Phenol-d6 | 81 | 37 | 116 |
| Nitrobenzene-d5 | 104 | 38 | 117 |
| 2-Fluorobiphenyl | 80 | 45 | 117 |
| 2,4,6-Tribromophenol | 93 | 11 | 158 |
| Terphenyl-d14 | 98 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.0094 |
| 1-Methylnaphthalene | 0.016 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.018 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | 0.0033 |
| Pyrene | 0.0085 |
| Benz(a)anthracene | 0.0023 |
| Chrysene | 0.0035 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-59-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-93 |
| Date Analyzed: | 05/17/22 | Data File: | 051728.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 66 | 24 | 111 |
| Phenol-d6 | 78 | 37 | 116 |
| Nitrobenzene-d5 | 195 ip | 38 | 117 |
| 2-Fluorobiphenyl | 97 | 45 | 117 |
| 2,4,6-Tribromophenol | 91 | 11 | 158 |
| Terphenyl-d14 | 93 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.42 |
| Phenanthrene | 0.066 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.0096 |
| Benz(a)anthracene | <0.002 |
| Chrysene | 0.0027 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-59-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-94 |
| Date Analyzed: | 05/18/22 | Data File: | 051729.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 64 | 24 | 111 |
| Phenol-d6 | 77 | 37 | 116 |
| Nitrobenzene-d5 | 170 ip | 38 | 117 |
| 2-Fluorobiphenyl | 82 | 45 | 117 |
| 2,4,6-Tribromophenol | 94 | 11 | 158 |
| Terphenyl-d14 | 99 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.36 |
| 1-Methylnaphthalene | 0.54 |
| Acenaphthylene | <0.002 |
| Acenaphthene | 0.093 |
| Fluorene | 0.20 |
| Phenanthrene | 0.11 |
| Anthracene | <0.002 |
| Fluoranthene | 0.0030 |
| Pyrene | 0.0053 |
| Benz(a)anthracene | 0.0023 |
| Chrysene | 0.0032 |
| Benzo(a)pyrene | 0.0029 |
| Benzo(b)fluoranthene | 0.0033 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | 0.0021 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | 0.0022 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-60-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-95 |
| Date Analyzed: | 05/18/22 | Data File: | 051730.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 58 | 24 | 111 |
| Phenol-d6 | 66 | 37 | 116 |
| Nitrobenzene-d5 | 59 | 38 | 117 |
| 2-Fluorobiphenyl | 72 | 45 | 117 |
| 2,4,6-Tribromophenol | 97 | 11 | 158 |
| Terphenyl-d14 | 86 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-61-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-97 |
| Date Analyzed: | 05/18/22 | Data File: | 051731.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 60 | 24 | 111 |
| Phenol-d6 | 66 | 37 | 116 |
| Nitrobenzene-d5 | 61 | 38 | 117 |
| 2-Fluorobiphenyl | 72 | 45 | 117 |
| 2,4,6-Tribromophenol | 94 | 11 | 158 |
| Terphenyl-d14 | 87 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-18-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-100 |
| Date Analyzed: | 05/18/22 | Data File: | 051732.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 58 | 24 | 111 |
| Phenol-d6 | 66 | 37 | 116 |
| Nitrobenzene-d5 | 62 | 38 | 117 |
| 2-Fluorobiphenyl | 72 | 45 | 117 |
| 2,4,6-Tribromophenol | 89 | 11 | 158 |
| Terphenyl-d14 | 91 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-19-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-102 |
| Date Analyzed: | 05/18/22 | Data File: | 051733.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 62 | 24 | 111 |
| Phenol-d6 | 68 | 37 | 116 |
| Nitrobenzene-d5 | 62 | 38 | 117 |
| 2-Fluorobiphenyl | 69 | 45 | 117 |
| 2,4,6-Tribromophenol | 94 | 11 | 158 |
| Terphenyl-d14 | 96 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-20-S1-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-104 |
| Date Analyzed: | 05/18/22 | Data File: | 051734.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 68 | 24 | 111 |
| Phenol-d6 | 75 | 37 | 116 |
| Nitrobenzene-d5 | 69 | 38 | 117 |
| 2-Fluorobiphenyl | 80 | 45 | 117 |
| 2,4,6-Tribromophenol | 103 | 11 | 158 |
| Terphenyl-d14 | 97 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-23-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-106 |
| Date Analyzed: | 05/18/22 | Data File: | 051735.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 60 | 24 | 111 |
| Phenol-d6 | 64 | 37 | 116 |
| Nitrobenzene-d5 | 61 | 38 | 117 |
| 2-Fluorobiphenyl | 66 | 45 | 117 |
| 2,4,6-Tribromophenol | 81 | 11 | 158 |
| Terphenyl-d14 | 87 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-27-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-107 |
| Date Analyzed: | 05/18/22 | Data File: | 051736.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 42 | 24 | 111 |
| Phenol-d6 | 52 | 37 | 116 |
| Nitrobenzene-d5 | 44 | 38 | 117 |
| 2-Fluorobiphenyl | 65 | 45 | 117 |
| 2,4,6-Tribromophenol | 89 | 11 | 158 |
| Terphenyl-d14 | 93 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-29-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-109 |
| Date Analyzed: | 05/18/22 | Data File: | 051737.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 55 | 24 | 111 |
| Phenol-d6 | 66 | 37 | 116 |
| Nitrobenzene-d5 | 62 | 38 | 117 |
| 2-Fluorobiphenyl | 74 | 45 | 117 |
| 2,4,6-Tribromophenol | 89 | 11 | 158 |
| Terphenyl-d14 | 91 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.0068 |
| Benz(a)anthracene | 0.0023 |
| Chrysene | 0.0041 |
| Benzo(a)pyrene | 0.0042 |
| Benzo(b)fluoranthene | 0.0039 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | 0.0025 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-29-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-110 |
| Date Analyzed: | 05/18/22 | Data File: | 051738.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 65 | 24 | 111 |
| Phenol-d6 | 72 | 37 | 116 |
| Nitrobenzene-d5 | 65 | 38 | 117 |
| 2-Fluorobiphenyl | 70 | 45 | 117 |
| 2,4,6-Tribromophenol | 87 | 11 | 158 |
| Terphenyl-d14 | 85 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-38-S2-5.0 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-112 |
| Date Analyzed: | 05/16/22 | Data File: | 051615.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 58 | 24 | 111 |
| Phenol-d6 | 70 | 37 | 116 |
| Nitrobenzene-d5 | 70 | 38 | 117 |
| 2-Fluorobiphenyl | 74 | 45 | 117 |
| 2,4,6-Tribromophenol | 90 | 11 | 158 |
| Terphenyl-d14 | 97 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-38-S200 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-113 |
| Date Analyzed: | 05/18/22 | Data File: | 051739.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 24 | 111 |
| Phenol-d6 | 68 | 37 | 116 |
| Nitrobenzene-d5 | 62 | 38 | 117 |
| 2-Fluorobiphenyl | 69 | 45 | 117 |
| 2,4,6-Tribromophenol | 95 | 11 | 158 |
| Terphenyl-d14 | 93 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-42-S1-2.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-114 1/500 |
| Date Analyzed: | 05/27/22 | Data File: | 052724.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 0 d | 24 | 111 |
| Phenol-d6 | 7 d | 37 | 116 |
| Nitrobenzene-d5 | 0 d | 38 | 117 |
| 2-Fluorobiphenyl | 10 d | 45 | 117 |
| 2,4,6-Tribromophenol | 0 d | 11 | 158 |
| Terphenyl-d14 | 20 d | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <1 |
| 2-Methylnaphthalene | <1 |
| 1-Methylnaphthalene | <1 |
| Acenaphthylene | <1 |
| Acenaphthene | <1 |
| Fluorene | <1 |
| Phenanthrene | 1.7 |
| Anthracene | <1 |
| Fluoranthene | <1 |
| Pyrene | 2.8 |
| Benz(a)anthracene | <1 |
| Chrysene | 1.9 |
| Benzo(a)pyrene | <1 |
| Benzo(b)fluoranthene | <1 |
| Benzo(k)fluoranthene | <1 |
| Indeno(1,2,3-cd)pyrene | <1 |
| Dibenz(a,h)anthracene | <1 |
| Benzo(g,h,i)perylene | <1 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-42-S3-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-117 |
| Date Analyzed: | 05/18/22 | Data File: | 051740.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 60 | 24 | 111 |
| Phenol-d6 | 71 | 37 | 116 |
| Nitrobenzene-d5 | 74 | 38 | 117 |
| 2-Fluorobiphenyl | 74 | 45 | 117 |
| 2,4,6-Tribromophenol | 91 | 11 | 158 |
| Terphenyl-d14 | 91 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-45-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-118 |
| Date Analyzed: | 05/18/22 | Data File: | 051741.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 65 | 24 | 111 |
| Phenol-d6 | 73 | 37 | 116 |
| Nitrobenzene-d5 | 68 | 38 | 117 |
| 2-Fluorobiphenyl | 77 | 45 | 117 |
| 2,4,6-Tribromophenol | 98 | 11 | 158 |
| Terphenyl-d14 | 95 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-51-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-121 |
| Date Analyzed: | 05/18/22 | Data File: | 051742.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 64 | 24 | 111 |
| Phenol-d6 | 74 | 37 | 116 |
| Nitrobenzene-d5 | 99 | 38 | 117 |
| 2-Fluorobiphenyl | 75 | 45 | 117 |
| 2,4,6-Tribromophenol | 86 | 11 | 158 |
| Terphenyl-d14 | 78 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.26 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.031 |
| Benz(a)anthracene | <0.002 |
| Chrysene | 0.012 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-51-S100-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-123 |
| Date Analyzed: | 05/18/22 | Data File: | 051743.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 61 | 24 | 111 |
| Phenol-d6 | 73 | 37 | 116 |
| Nitrobenzene-d5 | 98 | 38 | 117 |
| 2-Fluorobiphenyl | 75 | 45 | 117 |
| 2,4,6-Tribromophenol | 84 | 11 | 158 |
| Terphenyl-d14 | 81 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | 0.016 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.20 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.029 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-52-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-124 |
| Date Analyzed: | 05/18/22 | Data File: | 051744.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 57 | 24 | 111 |
| Phenol-d6 | 64 | 37 | 116 |
| Nitrobenzene-d5 | 58 | 38 | 117 |
| 2-Fluorobiphenyl | 71 | 45 | 117 |
| 2,4,6-Tribromophenol | 87 | 11 | 158 |
| Terphenyl-d14 | 91 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | TP-50-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/06/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 205113-126 |
| Date Analyzed: | 05/18/22 | Data File: | 051745.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 60 | 24 | 111 |
| Phenol-d6 | 69 | 37 | 116 |
| Nitrobenzene-d5 | 62 | 38 | 117 |
| 2-Fluorobiphenyl | 71 | 45 | 117 |
| 2,4,6-Tribromophenol | 97 | 11 | 158 |
| Terphenyl-d14 | 96 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 02-1187 mb |
| Date Analyzed: | 05/13/22 | Data File: | 051313.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 70 | 39 | 103 |
| Phenol-d6 | 76 | 48 | 109 |
| Nitrobenzene-d5 | 74 | 23 | 138 |
| 2-Fluorobiphenyl | 89 | 50 | 150 |
| 2,4,6-Tribromophenol | 85 | 40 | 127 |
| Terphenyl-d14 | 97 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/13/22 | Lab ID: | 02-1188 mb |
| Date Analyzed: | 05/13/22 | Data File: | 051312.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 67 | 39 | 103 |
| Phenol-d6 | 76 | 48 | 109 |
| Nitrobenzene-d5 | 76 | 23 | 138 |
| 2-Fluorobiphenyl | 87 | 50 | 150 |
| 2,4,6-Tribromophenol | 86 | 40 | 127 |
| Terphenyl-d14 | 96 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 02-1189 mb |
| Date Analyzed: | 05/16/22 | Data File: | 051612.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 79 | 24 | 111 |
| Phenol-d6 | 89 | 37 | 116 |
| Nitrobenzene-d5 | 89 | 38 | 117 |
| 2-Fluorobiphenyl | 90 | 45 | 117 |
| 2,4,6-Tribromophenol | 103 | 11 | 158 |
| Terphenyl-d14 | 107 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/22 | Lab ID: | 02-1190 mb |
| Date Analyzed: | 05/16/22 | Data File: | 051613.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | ya |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 72 | 24 | 111 |
| Phenol-d6 | 84 | 37 | 116 |
| Nitrobenzene-d5 | 87 | 38 | 117 |
| 2-Fluorobiphenyl | 87 | 45 | 117 |
| 2,4,6-Tribromophenol | 93 | 11 | 158 |
| Terphenyl-d14 | 99 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/17/22 | Lab ID: | 02-1190 mb3 |
| Date Analyzed: | 05/17/22 | Data File: | 051718.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 76 | 39 | 103 |
| Phenol-d6 | 86 | 48 | 109 |
| Nitrobenzene-d5 | 83 | 23 | 138 |
| 2-Fluorobiphenyl | 95 | 50 | 150 |
| 2,4,6-Tribromophenol | 94 | 40 | 127 |
| Terphenyl-d14 | 105 | 50 | 150 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 205113-42 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 100 | 61-153 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 205113-02 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 80 | 61-153 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 205113-37 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 100 | 61-153 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 205113-85 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 110 | 61-153 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 205218-01 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 85 | 71-131 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 205113-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 98 | 100 | 63-146 | 2 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 96 | 79-144 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 205219-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 114 | 110 | 73-135 | 4 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 112 | 74-139 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 205113-47 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 114 | 116 | 73-135 | 2 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 130 | 74-139 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 205113-69 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 520 | 112 | 97 | 63-146 | 13 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 108 | 79-144 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 205113-89 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 116 | 114 | 63-146 | 2 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 102 | 79-144 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 205113-109 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 74 | 118 | 105 | 63-146 | 12 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 104 | 79-144 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 205113-02 x5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | <5 | 79 | 71 vo | 75-125 | 11 |
| Barium | mg/kg (ppm) | 50 | 23.8 | 89 | 91 | 75-125 | 2 |
| Cadmium | mg/kg (ppm) | 10 | <5 | 94 | 91 | 75-125 | 3 |
| Chromium | mg/kg (ppm) | 50 | 10.7 | 88 | 89 | 75-125 | 1 |
| Copper | mg/kg (ppm) | 50 | 30.6 | 91 | 105 | 75-125 | 14 |
| Lead | mg/kg (ppm) | 50 | <5 | 97 | 98 | 75-125 | 1 |
| Nickel | mg/kg (ppm) | 25 | 10.2 | 97 | 98 | 75-125 | 1 |
| Selenium | mg/kg (ppm) | 5 | <5 | 68 vo | 63 vo | 75-125 | 8 |
| Silver | mg/kg (ppm) | 10 | <5 | 80 | 77 | 75-125 | 4 |
| Zinc | mg/kg (ppm) | 50 | 38.1 | 88 | 112 | 75-125 | 24 b |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 90 | 80-120 |
| Barium | mg/kg (ppm) | 50 | 95 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 98 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 99 | 80-120 |
| Copper | mg/kg (ppm) | 50 | 100 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 99 | 80-120 |
| Nickel | mg/kg (ppm) | 25 | 101 | 80-120 |
| Selenium | mg/kg (ppm) | 5 | 91 | 80-120 |
| Silver | mg/kg (ppm) | 10 | 91 | 80-120 |
| Zinc | mg/kg (ppm) | 50 | 99 | 80-120 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 205113-51 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 1.24 | 80 | 82 | 75-125 | 2 |
| Barium | mg/kg (ppm) | 50 | 32.8 | 113 | 99 | 75-125 | 13 |
| Cadmium | mg/kg (ppm) | 10 | <1 | 94 | 95 | 75-125 | 1 |
| Chromium | mg/kg (ppm) | 50 | 6.67 | 74 vo | 75 | 75-125 | 1 |
| Copper | mg/kg (ppm) | 50 | 33.5 | 77 | 96 | 75-125 | 22 b |
| Lead | mg/kg (ppm) | 50 | 7.10 | 98 | 106 | 75-125 | 8 |
| Nickel | mg/kg (ppm) | 25 | 6.52 | 77 | 77 | 75-125 | 0 |
| Selenium | mg/kg (ppm) | 5 | <1 | 68 vo | 69 vo | 75-125 | 1 |
| Silver | mg/kg (ppm) | 10 | <1 | 85 | 89 | 75-125 | 5 |
| Zinc | mg/kg (ppm) | 50 | 34.8 | 80 | 85 | 75-125 | 6 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 87 | 80-120 |
| Barium | mg/kg (ppm) | 50 | 94 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 97 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 97 | 80-120 |
| Copper | mg/kg (ppm) | 50 | 100 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 98 | 80-120 |
| Nickel | mg/kg (ppm) | 25 | 101 | 80-120 |
| Selenium | mg/kg (ppm) | 5 | 87 | 80-120 |
| Silver | mg/kg (ppm) | 10 | 89 | 80-120 |
| Zinc | mg/kg (ppm) | 50 | 99 | 80-120 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 205113-92 x5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | <5 | 69 vo | 68 vo | 75-125 | 1 |
| Barium | mg/kg (ppm) | 50 | 71.2 | 95 | 103 | 75-125 | 8 |
| Cadmium | mg/kg (ppm) | 10 | <5 | 96 | 96 | 75-125 | 0 |
| Chromium | mg/kg (ppm) | 50 | 14.2 | 90 | 93 | 75-125 | 3 |
| Copper | mg/kg (ppm) | 50 | 53.6 | 87 | 102 | 75-125 | 16 |
| Lead | mg/kg (ppm) | 50 | <5 | 101 | 104 | 75-125 | 3 |
| Nickel | mg/kg (ppm) | 25 | 14.9 | 95 | 101 | 75-125 | 6 |
| Selenium | mg/kg (ppm) | 5 | <5 | 61 vo | 59 vo | 75-125 | 3 |
| Silver | mg/kg (ppm) | 10 | <5 | 82 | 82 | 75-125 | 0 |
| Zinc | mg/kg (ppm) | 50 | 47.7 | 67 b | 77 | 75-125 | 14 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 88 | 80-120 |
| Barium | mg/kg (ppm) | 50 | 95 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 96 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 97 | 80-120 |
| Copper | mg/kg (ppm) | 50 | 99 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 100 | 80-120 |
| Nickel | mg/kg (ppm) | 25 | 100 | 80-120 |
| Selenium | mg/kg (ppm) | 5 | 87 | 80-120 |
| Silver | mg/kg (ppm) | 10 | 87 | 80-120 |
| Zinc | mg/kg (ppm) | 50 | 97 | 80-120 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 205113-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 0.125 | <0.1 | 94 | 94 | 71-125 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 0.125 | 91 | 68-125 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 205113-51 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 0.125 | <0.1 | 96 | 102 | 71-125 | 6 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 0.125 | 101 | 68-125 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 205113-92 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 0.125 | <0.1 | 87 | 103 | 71-125 | 17 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 0.125 | 85 | 68-125 |

Date of Report: 06/10/22
Date Received: 05/06/22
Project: Kosmos 0202832-001, F&BI 205113

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | 53 | 47 | 10-146 | 12 |
| Chloromethane | mg/kg (ppm) | 1 | 68 | 66 | 27-133 | 3 |
| Vinyl chloride | mg/kg (ppm) | 1 | 75 | 72 | 22-139 | 4 |
| Bromomethane | mg/kg (ppm) | 1 | 98 | 86 | 38-114 | 13 |
| Chloroethane | mg/kg (ppm) | 1 | 86 | 81 | 9-163 | 6 |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | 91 | 86 | 10-196 | 6 |
| Acetone | mg/kg (ppm) | 5 | 73 | 76 | 52-141 | 4 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | 100 | 95 | 47-128 | 5 |
| Hexane | mg/kg (ppm) | 1 | 97 | 97 | 43-142 | 0 |
| Methylene chloride | mg/kg (ppm) | 1 | 161 | 89 | 10-184 | 58 vo |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | 103 | 96 | 60-123 | 7 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | 101 | 95 | 67-129 | 6 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | 103 | 96 | 68-115 | 7 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | 138 | 127 | 52-170 | 8 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | 104 | 98 | 72-127 | 6 |
| Chloroform | mg/kg (ppm) | 1 | 109 | 100 | 66-120 | 9 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | 95 | 96 | 30-197 | 1 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | 102 | 97 | 56-135 | 5 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | 110 | 103 | 62-131 | 7 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | 105 | 98 | 69-128 | 7 |
| Carbon tetrachloride | mg/kg (ppm) | 1 | 113 | 105 | 60-139 | 7 |
| Benzene | mg/kg (ppm) | 1 | 100 | 97 | 71-118 | 3 |
| Trichloroethene | mg/kg (ppm) | 1 | 102 | 98 | 63-121 | 4 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | 97 | 94 | 72-127 | 3 |
| Bromodichloromethane | mg/kg (ppm) | 1 | 107 | 103 | 57-126 | 4 |
| Dibromomethane | mg/kg (ppm) | 1 | 104 | 99 | 62-123 | 5 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | 104 | 104 | 45-145 | 0 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | 104 | 106 | 67-122 | 2 |
| Toluene | mg/kg (ppm) | 1 | 95 | 89 | 66-126 | 7 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | 101 | 98 | 72-132 | 3 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | 96 | 91 | 64-115 | 5 |
| 2-Hexanone | mg/kg (ppm) | 5 | 102 | 99 | 33-152 | 3 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | 95 | 91 | 72-130 | 4 |
| Tetrachloroethene | mg/kg (ppm) | 1 | 98 | 96 | 72-114 | 2 |
| Dibromochloromethane | mg/kg (ppm) | 1 | 98 | 93 | 55-121 | 5 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | 97 | 93 | 74-132 | 4 |
| Chlorobenzene | mg/kg (ppm) | 1 | 97 | 92 | 76-111 | 5 |
| Ethylbenzene | mg/kg (ppm) | 1 | 98 | 93 | 64-123 | 5 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | 107 | 98 | 64-121 | 9 |
| m,p-Xylene | mg/kg (ppm) | 2 | 97 | 93 | 78-122 | 4 |
| o-Xylene | mg/kg (ppm) | 1 | 101 | 95 | 77-124 | 6 |
| Styrene | mg/kg (ppm) | 1 | 97 | 91 | 74-126 | 6 |
| Isopropylbenzene | mg/kg (ppm) | 1 | 98 | 93 | 76-127 | 5 |
| Bromoform | mg/kg (ppm) | 1 | 97 | 91 | 56-132 | 6 |
| n-Propylbenzene | mg/kg (ppm) | 1 | 94 | 93 | 74-124 | 1 |
| Bromobenzene | mg/kg (ppm) | 1 | 93 | 90 | 72-122 | 3 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | 94 | 91 | 76-126 | 3 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | 96 | 94 | 56-143 | 2 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | 94 | 89 | 61-137 | 5 |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | 94 | 91 | 74-121 | 3 |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | 95 | 90 | 75-122 | 5 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | 96 | 93 | 73-130 | 3 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | 97 | 93 | 76-125 | 4 |
| sec-Butylbenzene | mg/kg (ppm) | 1 | 97 | 94 | 71-130 | 3 |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | 98 | 95 | 70-132 | 3 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | 95 | 91 | 75-121 | 4 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | 95 | 91 | 74-117 | 4 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | 96 | 89 | 76-121 | 8 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | 100 | 92 | 58-138 | 8 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | 100 | 93 | 64-135 | 7 |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | 99 | 98 | 50-153 | 1 |
| Naphthalene | mg/kg (ppm) | 1 | 96 | 89 | 63-140 | 8 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | 98 | 90 | 63-138 | 9 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | 51 | 49 | 10-146 | 4 |
| Chloromethane | mg/kg (ppm) | 1 | 72 | 73 | 27-133 | 1 |
| Vinyl chloride | mg/kg (ppm) | 1 | 77 | 77 | 22-139 | 0 |
| Bromomethane | mg/kg (ppm) | 1 | 89 | 82 | 38-114 | 8 |
| Chloroethane | mg/kg (ppm) | 1 | 83 | 84 | 9-163 | 1 |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | 87 | 85 | 10-196 | 2 |
| Acetone | mg/kg (ppm) | 5 | 69 | 77 | 52-141 | 11 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | 97 | 97 | 47-128 | 0 |
| Hexane | mg/kg (ppm) | 1 | 96 | 99 | 43-142 | 3 |
| Methylene chloride | mg/kg (ppm) | 1 | 105 | 110 | 10-184 | 5 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | 98 | 102 | 60-123 | 4 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | 98 | 99 | 67-129 | 1 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | 98 | 99 | 68-115 | 1 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | 130 | 131 | 52-170 | 1 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | 98 | 103 | 72-127 | 5 |
| Chloroform | mg/kg (ppm) | 1 | 102 | 107 | 66-120 | 5 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | 92 | 98 | 30-197 | 6 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | 99 | 102 | 56-135 | 3 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | 105 | 106 | 62-131 | 1 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | 99 | 103 | 69-128 | 4 |
| Carbon tetrachloride | mg/kg (ppm) | 1 | 106 | 108 | 60-139 | 2 |
| Benzene | mg/kg (ppm) | 1 | 97 | 101 | 71-118 | 4 |
| Trichloroethene | mg/kg (ppm) | 1 | 98 | 101 | 63-121 | 3 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | 93 | 98 | 72-127 | 5 |
| Bromodichloromethane | mg/kg (ppm) | 1 | 104 | 108 | 57-126 | 4 |
| Dibromomethane | mg/kg (ppm) | 1 | 99 | 101 | 62-123 | 2 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | 102 | 106 | 45-145 | 4 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | 104 | 110 | 67-122 | 6 |
| Toluene | mg/kg (ppm) | 1 | 91 | 95 | 66-126 | 4 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | 96 | 103 | 72-132 | 7 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | 91 | 96 | 64-115 | 5 |
| 2-Hexanone | mg/kg (ppm) | 5 | 97 | 104 | 33-152 | 7 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | 89 | 97 | 72-130 | 9 |
| Tetrachloroethene | mg/kg (ppm) | 1 | 97 | 99 | 72-114 | 2 |
| Dibromochloromethane | mg/kg (ppm) | 1 | 93 | 98 | 55-121 | 5 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | 93 | 98 | 74-132 | 5 |
| Chlorobenzene | mg/kg (ppm) | 1 | 92 | 99 | 76-111 | 7 |
| Ethylbenzene | mg/kg (ppm) | 1 | 94 | 98 | 64-123 | 4 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | 98 | 103 | 64-121 | 5 |
| m,p-Xylene | mg/kg (ppm) | 2 | 92 | 99 | 78-122 | 7 |
| o-Xylene | mg/kg (ppm) | 1 | 97 | 100 | 77-124 | 3 |
| Styrene | mg/kg (ppm) | 1 | 93 | 99 | 74-126 | 6 |
| Isopropylbenzene | mg/kg (ppm) | 1 | 94 | 98 | 76-127 | 4 |
| Bromoform | mg/kg (ppm) | 1 | 91 | 98 | 56-132 | 7 |
| n-Propylbenzene | mg/kg (ppm) | 1 | 93 | 94 | 74-124 | 1 |
| Bromobenzene | mg/kg (ppm) | 1 | 90 | 93 | 72-122 | 3 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | 93 | 93 | 76-126 | 0 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | 96 | 96 | 56-143 | 0 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | 94 | 93 | 61-137 | 1 |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | 92 | 94 | 74-121 | 2 |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | 90 | 92 | 75-122 | 2 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | 94 | 97 | 73-130 | 3 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | 94 | 95 | 76-125 | 1 |
| sec-Butylbenzene | mg/kg (ppm) | 1 | 94 | 94 | 71-130 | 0 |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | 95 | 97 | 70-132 | 2 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | 92 | 95 | 75-121 | 3 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | 91 | 94 | 74-117 | 3 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | 93 | 94 | 76-121 | 1 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | 93 | 93 | 58-138 | 0 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | 96 | 97 | 64-135 | 1 |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | 100 | 97 | 50-153 | 3 |
| Naphthalene | mg/kg (ppm) | 1 | 91 | 93 | 63-140 | 2 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | 92 | 95 | 63-138 | 3 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 205253-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | <0.5 | 17 | 15 | 10-142 | 12 |
| Chloromethane | mg/kg (ppm) | 1 | <0.5 | 46 | 42 | 10-126 | 9 |
| Vinyl chloride | mg/kg (ppm) | 1 | <0.05 | 46 | 39 | 10-138 | 16 |
| Bromomethane | mg/kg (ppm) | 1 | <0.5 | 73 | 54 | 10-163 | 30 vo |
| Chloroethane | mg/kg (ppm) | 1 | <0.5 | 58 | 48 | 10-176 | 19 |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | <0.5 | 49 | 42 | 10-176 | 15 |
| Acetone | mg/kg (ppm) | 5 | <5 | 64 | 58 | 10-163 | 10 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 71 | 59 | 10-160 | 18 |
| Hexane | mg/kg (ppm) | 1 | <0.25 | 50 | 44 | 10-137 | 13 |
| Methylene chloride | mg/kg (ppm) | 1 | <0.5 | 81 | 71 | 10-156 | 13 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | <0.05 | 87 | 78 | 21-145 | 11 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 81 | 71 | 14-137 | 13 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | <0.05 | 85 | 74 | 19-140 | 14 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 112 | 94 | 10-158 | 17 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 87 | 80 | 25-135 | 8 |
| Chloroform | mg/kg (ppm) | 1 | <0.05 | 88 | 78 | 21-145 | 12 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | <1 | 83 | 77 | 19-147 | 7 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | <0.05 | 80 | 69 | 12-160 | 15 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | <0.05 | 86 | 72 | 10-156 | 18 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 82 | 74 | 17-140 | 10 |
| Carbon tetrachloride | mg/kg (ppm) | 1 | <0.05 | 86 | 75 | 9-164 | 14 |
| Benzene | mg/kg (ppm) | 1 | <0.03 | 80 | 79 | 29-129 | 1 |
| Trichloroethene | mg/kg (ppm) | 1 | <0.02 | 80 | 77 | 21-139 | 4 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 78 | 80 | 30-135 | 3 |
| Bromodichloromethane | mg/kg (ppm) | 1 | <0.05 | 88 | 83 | 23-155 | 6 |
| Dibromomethane | mg/kg (ppm) | 1 | <0.05 | 82 | 78 | 23-145 | 5 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | <1 | 86 | 90 | 24-155 | 5 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 90 | 89 | 28-144 | 1 |
| Toluene | mg/kg (ppm) | 1 | <0.05 | 81 | 82 | 35-130 | 1 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 89 | 89 | 26-149 | 0 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | <0.05 | 83 | 83 | 10-205 | 0 |
| 2-Hexanone | mg/kg (ppm) | 5 | <0.5 | 88 | 90 | 15-166 | 2 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 83 | 84 | 31-137 | 1 |
| Tetrachloroethene | mg/kg (ppm) | 1 | 11 | -642 | -644 | 20-133 | |
| Dibromochloromethane | mg/kg (ppm) | 1 | <0.05 | 87 | 85 | 28-150 | 2 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | <0.05 | 85 | 85 | 28-142 | 0 |
| Chlorobenzene | mg/kg (ppm) | 1 | <0.05 | 83 | 84 | 32-129 | 1 |
| Ethylbenzene | mg/kg (ppm) | 1 | <0.05 | 85 | 84 | 32-137 | 1 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | <0.05 | 92 | 89 | 31-143 | 3 |
| m,p-Xylene | mg/kg (ppm) | 2 | <0.1 | 84 | 85 | 34-136 | 1 |
| o-Xylene | mg/kg (ppm) | 1 | <0.05 | 88 | 87 | 33-134 | 1 |
| Styrene | mg/kg (ppm) | 1 | <0.05 | 84 | 87 | 35-137 | 4 |
| Isopropylbenzene | mg/kg (ppm) | 1 | <0.05 | 85 | 85 | 31-142 | 0 |
| Bromoform | mg/kg (ppm) | 1 | <0.05 | 90 | 87 | 21-156 | 3 |
| n-Propylbenzene | mg/kg (ppm) | 1 | <0.05 | 84 | 84 | 23-146 | 0 |
| Bromobenzene | mg/kg (ppm) | 1 | <0.05 | 82 | 84 | 34-130 | 2 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | <0.05 | 83 | 83 | 18-149 | 0 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | <0.05 | 87 | 88 | 28-140 | 1 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | <0.05 | 84 | 83 | 25-144 | 1 |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | <0.05 | 84 | 82 | 31-134 | 2 |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | <0.05 | 83 | 82 | 31-136 | 1 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | <0.05 | 85 | 86 | 30-137 | 1 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | <0.05 | 86 | 85 | 10-182 | 1 |
| sec-Butylbenzene | mg/kg (ppm) | 1 | <0.05 | 86 | 85 | 23-145 | 1 |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | <0.05 | 86 | 85 | 21-149 | 1 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 85 | 84 | 30-131 | 1 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 84 | 85 | 29-129 | 1 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 83 | 84 | 31-132 | 1 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | <0.5 | 87 | 81 | 11-161 | 7 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | <0.25 | 89 | 88 | 22-142 | 1 |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | <0.25 | 88 | 85 | 10-142 | 3 |
| Naphthalene | mg/kg (ppm) | 1 | <0.05 | 82 | 83 | 14-157 | 1 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | <0.25 | 84 | 84 | 20-144 | 0 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | 42 | 10-146 |
| Chloromethane | mg/kg (ppm) | 1 | 67 | 27-133 |
| Vinyl chloride | mg/kg (ppm) | 1 | 72 | 22-139 |
| Bromomethane | mg/kg (ppm) | 1 | 74 | 38-114 |
| Chloroethane | mg/kg (ppm) | 1 | 72 | 9-163 |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | 77 | 10-196 |
| Acetone | mg/kg (ppm) | 5 | 74 | 52-141 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | 92 | 47-128 |
| Hexane | mg/kg (ppm) | 1 | 101 | 43-142 |
| Methylene chloride | mg/kg (ppm) | 1 | 94 | 10-184 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | 98 | 60-123 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | 100 | 67-129 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | 101 | 68-115 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | 127 | 52-170 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | 101 | 72-127 |
| Chloroform | mg/kg (ppm) | 1 | 99 | 66-120 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | 96 | 30-197 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | 91 | 56-135 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | 100 | 62-131 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | 101 | 69-128 |
| Carbon tetrachloride | mg/kg (ppm) | 1 | 102 | 60-139 |
| Benzene | mg/kg (ppm) | 1 | 103 | 71-118 |
| Trichloroethene | mg/kg (ppm) | 1 | 101 | 63-121 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | 100 | 72-127 |
| Bromodichloromethane | mg/kg (ppm) | 1 | 101 | 57-126 |
| Dibromomethane | mg/kg (ppm) | 1 | 100 | 62-123 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | 106 | 45-145 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | 110 | 67-122 |
| Toluene | mg/kg (ppm) | 1 | 99 | 66-126 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | 103 | 72-132 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | 93 | 64-115 |
| 2-Hexanone | mg/kg (ppm) | 5 | 99 | 33-152 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | 94 | 72-130 |
| Tetrachloroethene | mg/kg (ppm) | 1 | 96 | 72-114 |
| Dibromochloromethane | mg/kg (ppm) | 1 | 95 | 55-121 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | 95 | 74-132 |
| Chlorobenzene | mg/kg (ppm) | 1 | 94 | 76-111 |
| Ethylbenzene | mg/kg (ppm) | 1 | 95 | 64-123 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | 101 | 64-121 |
| m,p-Xylene | mg/kg (ppm) | 2 | 95 | 78-122 |
| o-Xylene | mg/kg (ppm) | 1 | 98 | 77-124 |
| Styrene | mg/kg (ppm) | 1 | 95 | 74-126 |
| Isopropylbenzene | mg/kg (ppm) | 1 | 95 | 76-127 |
| Bromoform | mg/kg (ppm) | 1 | 92 | 56-132 |
| n-Propylbenzene | mg/kg (ppm) | 1 | 93 | 74-124 |
| Bromobenzene | mg/kg (ppm) | 1 | 91 | 72-122 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | 92 | 76-126 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | 93 | 56-143 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | 91 | 61-137 |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | 91 | 74-121 |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | 92 | 75-122 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | 93 | 73-130 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | 93 | 76-125 |
| sec-Butylbenzene | mg/kg (ppm) | 1 | 93 | 71-130 |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | 94 | 70-132 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | 91 | 75-121 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | 92 | 74-117 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | 92 | 76-121 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | 88 | 58-138 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | 94 | 64-135 |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | 93 | 50-153 |
| Naphthalene | mg/kg (ppm) | 1 | 89 | 63-140 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | 91 | 63-138 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | 43 | 43 | 10-146 | 0 |
| Chloromethane | mg/kg (ppm) | 1 | 66 | 68 | 27-133 | 3 |
| Vinyl chloride | mg/kg (ppm) | 1 | 71 | 72 | 22-139 | 1 |
| Bromomethane | mg/kg (ppm) | 1 | 93 | 81 | 38-114 | 14 |
| Chloroethane | mg/kg (ppm) | 1 | 74 | 79 | 9-163 | 7 |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | 81 | 82 | 10-196 | 1 |
| Acetone | mg/kg (ppm) | 5 | 81 | 79 | 52-141 | 2 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | 98 | 98 | 47-128 | 0 |
| Hexane | mg/kg (ppm) | 1 | 96 | 105 | 43-142 | 9 |
| Methylene chloride | mg/kg (ppm) | 1 | 105 | 112 | 10-184 | 6 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | 102 | 106 | 60-123 | 4 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | 98 | 108 | 67-129 | 10 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | 102 | 110 | 68-115 | 8 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | 130 | 139 | 52-170 | 7 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | 103 | 112 | 72-127 | 8 |
| Chloroform | mg/kg (ppm) | 1 | 105 | 109 | 66-120 | 4 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | 99 | 102 | 30-197 | 3 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | 101 | 102 | 56-135 | 1 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | 107 | 108 | 62-131 | 1 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | 102 | 104 | 69-128 | 2 |
| Carbon tetrachloride | mg/kg (ppm) | 1 | 112 | 112 | 60-139 | 0 |
| Benzene | mg/kg (ppm) | 1 | 101 | 102 | 71-118 | 1 |
| Trichloroethene | mg/kg (ppm) | 1 | 104 | 104 | 63-121 | 0 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | 99 | 98 | 72-127 | 1 |
| Bromodichloromethane | mg/kg (ppm) | 1 | 107 | 108 | 57-126 | 1 |
| Dibromomethane | mg/kg (ppm) | 1 | 104 | 105 | 62-123 | 1 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | 110 | 107 | 45-145 | 3 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | 112 | 112 | 67-122 | 0 |
| Toluene | mg/kg (ppm) | 1 | 93 | 93 | 66-126 | 0 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | 102 | 100 | 72-132 | 2 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | 96 | 92 | 64-115 | 4 |
| 2-Hexanone | mg/kg (ppm) | 5 | 102 | 97 | 33-152 | 5 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | 96 | 93 | 72-130 | 3 |
| Tetrachloroethene | mg/kg (ppm) | 1 | 100 | 96 | 72-114 | 4 |
| Dibromochloromethane | mg/kg (ppm) | 1 | 97 | 94 | 55-121 | 3 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | 97 | 94 | 74-132 | 3 |
| Chlorobenzene | mg/kg (ppm) | 1 | 97 | 96 | 76-111 | 1 |
| Ethylbenzene | mg/kg (ppm) | 1 | 97 | 95 | 64-123 | 2 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | 103 | 102 | 64-121 | 1 |
| m,p-Xylene | mg/kg (ppm) | 2 | 97 | 96 | 78-122 | 1 |
| o-Xylene | mg/kg (ppm) | 1 | 99 | 98 | 77-124 | 1 |
| Styrene | mg/kg (ppm) | 1 | 96 | 95 | 74-126 | 1 |
| Isopropylbenzene | mg/kg (ppm) | 1 | 96 | 96 | 76-127 | 0 |
| Bromoform | mg/kg (ppm) | 1 | 95 | 91 | 56-132 | 4 |
| n-Propylbenzene | mg/kg (ppm) | 1 | 91 | 95 | 74-124 | 4 |
| Bromobenzene | mg/kg (ppm) | 1 | 87 | 91 | 72-122 | 4 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | 90 | 94 | 76-126 | 4 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | 91 | 95 | 56-143 | 4 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | 90 | 92 | 61-137 | 2 |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | 88 | 92 | 74-121 | 4 |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | 89 | 92 | 75-122 | 3 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | 93 | 94 | 73-130 | 1 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | 91 | 95 | 76-125 | 4 |
| sec-Butylbenzene | mg/kg (ppm) | 1 | 91 | 96 | 71-130 | 5 |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | 93 | 96 | 70-132 | 3 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | 91 | 93 | 75-121 | 2 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | 88 | 94 | 74-117 | 7 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | 90 | 94 | 76-121 | 4 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | 91 | 95 | 58-138 | 4 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | 93 | 98 | 64-135 | 5 |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | 93 | 95 | 50-153 | 2 |
| Naphthalene | mg/kg (ppm) | 1 | 89 | 95 | 63-140 | 7 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | 88 | 96 | 63-138 | 9 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 205113-04 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | <0.002 | 84 | 65 | 50-150 | 26 vo |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 90 | 73 | 50-150 | 21 vo |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 90 | 74 | 50-150 | 20 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 78 | 50-150 | 18 |
| Acenaphthene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 78 | 50-150 | 18 |
| Fluorene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 80 | 50-150 | 15 |
| Phenanthrene | mg/kg (ppm) | 0.83 | <0.002 | 98 | 83 | 50-150 | 17 |
| Anthracene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 81 | 50-150 | 14 |
| Fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 100 | 86 | 50-150 | 15 |
| Pyrene | mg/kg (ppm) | 0.83 | <0.002 | 91 | 101 | 50-150 | 10 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 97 | 87 | 50-150 | 11 |
| Chrysene | mg/kg (ppm) | 0.83 | <0.002 | 97 | 86 | 50-150 | 12 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 103 | 111 | 50-150 | 7 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 110 | 124 | 50-150 | 12 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 106 | 127 | 50-150 | 18 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 111 | 89 | 50-150 | 22 vo |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 97 | 75 | 50-150 | 26 vo |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | <0.002 | 91 | 75 | 50-150 | 19 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 73 | 61-102 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 79 | 62-108 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 79 | 62-108 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 85 | 61-111 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 84 | 61-110 |
| Fluorene | mg/kg (ppm) | 0.83 | 88 | 62-114 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 96 | 64-112 |
| Anthracene | mg/kg (ppm) | 0.83 | 90 | 63-111 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 106 | 66-115 |
| Pyrene | mg/kg (ppm) | 0.83 | 86 | 65-112 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 95 | 64-116 |
| Chrysene | mg/kg (ppm) | 0.83 | 97 | 66-119 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 92 | 62-116 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 98 | 61-118 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 96 | 65-119 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 112 | 64-130 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 98 | 67-131 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 95 | 67-126 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 205113-42 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | <0.002 | 82 | 72 | 50-150 | 13 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 91 | 81 | 50-150 | 12 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 91 | 81 | 50-150 | 12 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | <0.002 | 98 | 85 | 50-150 | 14 |
| Acenaphthene | mg/kg (ppm) | 0.83 | <0.002 | 97 | 84 | 50-150 | 14 |
| Fluorene | mg/kg (ppm) | 0.83 | <0.002 | 101 | 85 | 50-150 | 17 |
| Phenanthrene | mg/kg (ppm) | 0.83 | <0.002 | 103 | 88 | 50-150 | 16 |
| Anthracene | mg/kg (ppm) | 0.83 | <0.002 | 100 | 86 | 50-150 | 15 |
| Fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 107 | 92 | 50-150 | 15 |
| Pyrene | mg/kg (ppm) | 0.83 | <0.002 | 97 | 81 | 50-150 | 18 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 101 | 88 | 50-150 | 14 |
| Chrysene | mg/kg (ppm) | 0.83 | <0.002 | 103 | 90 | 50-150 | 13 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 100 | 87 | 50-150 | 14 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 103 | 91 | 50-150 | 12 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 102 | 88 | 50-150 | 15 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 117 | 104 | 50-150 | 12 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 102 | 90 | 50-150 | 12 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | <0.002 | 99 | 88 | 50-150 | 12 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 83 | 61-102 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 84 | 62-108 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 84 | 62-108 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 92 | 61-111 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 91 | 61-110 |
| Fluorene | mg/kg (ppm) | 0.83 | 89 | 62-114 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 97 | 64-112 |
| Anthracene | mg/kg (ppm) | 0.83 | 91 | 63-111 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 95 | 66-115 |
| Pyrene | mg/kg (ppm) | 0.83 | 94 | 65-112 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 91 | 64-116 |
| Chrysene | mg/kg (ppm) | 0.83 | 93 | 66-119 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 88 | 62-116 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 98 | 61-118 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 93 | 65-119 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 108 | 64-130 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 94 | 67-131 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 92 | 67-126 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 205113-74 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 0.58 | 44 b | 15 b | 34-118 | 98 b |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 0.38 | 98 b | 83 b | 29-130 | 17 b |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 0.41 | 57 b | 60 b | 37-119 | 5 b |
| Acenaphthylene | mg/kg (ppm) | 0.83 | <0.002 | 95 | 98 | 45-128 | 3 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 0.0093 | 90 | 90 | 36-125 | 0 |
| Fluorene | mg/kg (ppm) | 0.83 | 0.015 | 93 | 96 | 48-121 | 3 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 0.014 | 91 | 91 | 50-150 | 0 |
| Anthracene | mg/kg (ppm) | 0.83 | <0.002 | 94 | 92 | 50-150 | 2 |
| Fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 103 | 100 | 50-150 | 3 |
| Pyrene | mg/kg (ppm) | 0.83 | <0.002 | 95 | 93 | 50-150 | 2 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 97 | 96 | 50-150 | 1 |
| Chrysene | mg/kg (ppm) | 0.83 | <0.002 | 92 | 91 | 50-150 | 1 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 103 | 97 | 50-150 | 6 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 120 | 113 | 50-150 | 6 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 102 | 97 | 50-150 | 5 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 94 | 86 | 41-134 | 9 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 89 | 84 | 44-130 | 6 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | <0.002 | 82 | 76 | 33-131 | 8 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 72 | 58-108 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 78 | 67-108 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 78 | 66-107 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 83 | 70-130 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 80 | 66-112 |
| Fluorene | mg/kg (ppm) | 0.83 | 86 | 67-117 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 83 | 70-130 |
| Anthracene | mg/kg (ppm) | 0.83 | 84 | 70-130 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 95 | 70-130 |
| Pyrene | mg/kg (ppm) | 0.83 | 87 | 70-130 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 89 | 70-130 |
| Chrysene | mg/kg (ppm) | 0.83 | 86 | 70-130 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 89 | 68-120 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 94 | 69-125 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 92 | 70-130 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 92 | 67-129 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 89 | 67-128 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 84 | 64-127 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 205113-112 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | <0.002 | 78 | 71 | 34-118 | 9 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 86 | 79 | 29-130 | 8 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 85 | 79 | 37-119 | 7 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | <0.002 | 89 | 85 | 45-128 | 5 |
| Acenaphthene | mg/kg (ppm) | 0.83 | <0.002 | 85 | 81 | 36-125 | 5 |
| Fluorene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 89 | 48-121 | 4 |
| Phenanthrene | mg/kg (ppm) | 0.83 | <0.002 | 87 | 86 | 50-150 | 1 |
| Anthracene | mg/kg (ppm) | 0.83 | <0.002 | 90 | 89 | 50-150 | 1 |
| Fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 100 | 98 | 50-150 | 2 |
| Pyrene | mg/kg (ppm) | 0.83 | <0.002 | 89 | 87 | 50-150 | 2 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 90 | 50-150 | 3 |
| Chrysene | mg/kg (ppm) | 0.83 | <0.002 | 90 | 87 | 50-150 | 3 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 97 | 94 | 50-150 | 3 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 96 | 94 | 50-150 | 2 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 96 | 93 | 50-150 | 3 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 86 | 41-134 | 8 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 90 | 84 | 44-130 | 7 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | <0.002 | 83 | 76 | 33-131 | 9 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 79 | 58-108 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 90 | 67-108 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 90 | 66-107 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 94 | 70-130 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 90 | 66-112 |
| Fluorene | mg/kg (ppm) | 0.83 | 96 | 67-117 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 92 | 70-130 |
| Anthracene | mg/kg (ppm) | 0.83 | 94 | 70-130 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 105 | 70-130 |
| Pyrene | mg/kg (ppm) | 0.83 | 94 | 70-130 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 98 | 70-130 |
| Chrysene | mg/kg (ppm) | 0.83 | 94 | 70-130 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 98 | 68-120 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 102 | 69-125 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 98 | 70-130 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 102 | 67-129 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 97 | 67-128 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 93 | 64-127 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 205113-112 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | <0.002 | 78 | 71 | 34-118 | 9 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 86 | 79 | 29-130 | 8 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 85 | 79 | 37-119 | 7 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | <0.002 | 89 | 85 | 45-128 | 5 |
| Acenaphthene | mg/kg (ppm) | 0.83 | <0.002 | 85 | 81 | 36-125 | 5 |
| Fluorene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 89 | 48-121 | 4 |
| Phenanthrene | mg/kg (ppm) | 0.83 | <0.002 | 87 | 86 | 50-150 | 1 |
| Anthracene | mg/kg (ppm) | 0.83 | <0.002 | 90 | 89 | 50-150 | 1 |
| Fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 100 | 98 | 50-150 | 2 |
| Pyrene | mg/kg (ppm) | 0.83 | <0.002 | 89 | 87 | 50-150 | 2 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 90 | 50-150 | 3 |
| Chrysene | mg/kg (ppm) | 0.83 | <0.002 | 90 | 87 | 50-150 | 3 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 97 | 94 | 50-150 | 3 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 96 | 94 | 50-150 | 2 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 96 | 93 | 50-150 | 3 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 86 | 41-134 | 8 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 90 | 84 | 44-130 | 7 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | <0.002 | 83 | 76 | 33-131 | 9 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 79 | 58-108 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 90 | 67-108 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 90 | 66-107 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 94 | 70-130 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 90 | 66-112 |
| Fluorene | mg/kg (ppm) | 0.83 | 96 | 67-117 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 92 | 70-130 |
| Anthracene | mg/kg (ppm) | 0.83 | 94 | 70-130 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 105 | 70-130 |
| Pyrene | mg/kg (ppm) | 0.83 | 94 | 70-130 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 98 | 70-130 |
| Chrysene | mg/kg (ppm) | 0.83 | 94 | 70-130 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 98 | 68-120 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 102 | 69-125 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 98 | 70-130 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 102 | 67-129 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 97 | 67-128 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 93 | 64-127 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

205113

# SAMPLE CHAIN OF CUSTODY 05.06.22

CI3/D03

Page # 1 of 10

Report To Angie Goodwin

Company Hart Crowser / Haley & Aldrich

Address 3131 Elliot Ave #600

City, State, ZIP Seattle WA 98121

Phone 206-324-9530 Email AGoodwin@HaleyAldrich.com

SAMPLERS (signature) MBradshaw

PROJECT NAME: KOSMOS

PO #: 02 02832-001

REMARKS: Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-16-S1-5 | 01 A-F | 5/3/22 | 0800 | soil | 6 | X | | | | | | | | | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-16-S2-10 | 02 | 5/3/22 | 0905 | | | X | X | | | | | | | X | | | |
| TP-17-S1-5 | 03 | 5/5/22 | 1050 | | | X | | | | | | | | | | | |
| TP-17-S2-10 | 04 | 5/5/22 | 1115 | | | X | | | | | X | | | X | | | |
| TP-17-S3-15 | 05 | 5/5/22 | 1140 | | | X | X | | | | | | | | | | |
| TP-21-S1-5 | 06 | 5/5/22 | 1425 | | | X | X | | | | | | X | | | | |
| TP-21-S2-10 | 07 | 5/5/22 | 1440 | | | X | X | | | X | X | | X | X | | | |
| TP-21-S200-10 | 08 | 5/5/22 | 1445 | | | X | X | | | X | X | | X | X | | | |
| TP-21-S3-15 | 09 | 5/5/22 | 1510 | | | X | X | | | X | X | | X | | | | |
| TP-22-S1-5 | 10 | 5/5/22 | 1017 | | | X | X | | | X | X | | X | X | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: MBradshaw | Maggie Bradshaw | HC / Haley & Aldrich | 5/6/22 | |
| Received by: | Tokala Christensen | FTB | 5/6/22 | 14:38 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

# SAMPLE CHAIN OF CUSTODY

205113

05-06-22 CI3 / D03

Page # 2 of 10

Report To Angie Goodwin

Company HC / Haley & Aldrich

Address

City, State, ZIP

Phone Email

SAMPLERS (signature) MBradshaw

PROJECT NAME: KOSMOS

PO #: 0202832-001

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
☐ Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-22-S2-10 | 11 A-F | 5/5/22 | 1030 | Soil | 6 | X | X | | | | X | | | | | | |
| TP-22-S 3-15 | 12 | " | 1044 | " | " | | | | | | | | | | | | only 1 voa labeled AMB5/9 |
| TP-24-S1-2.5 | 13 | " | 1115 | " | " | X | X | | | X | X | | X | X | | | |
| TP-24-S100-2.5 | 14 | " | 1115 | " | " | X | X | | | X | X | | X | X | | | true metal match AMB5/9 |
| TP-24-S2-5 | 15 | " | 1501 | " | " | X | X | | | X | X | | X | | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-24-S3-10 | 16 | " | 1510 | " | " | X | X | | | | X | | | | | | |
| TP-24-S4-15 | 17 | " | 1524 | " | " | | | | | | | | | | | | |
| TP-25-S1-2.5 | 18 | " | 1151 | " | " | X | X | | | X | | | X | | | | |
| TP-25-S2-5 | 19 | " | 1202 | " | " | X | X | | | | X | | | X | | | |
| TP-25-S3-10 | 20 | " | 1210 | " | " | | | | | | | | | | | | |

ANALYSES REQUESTED

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: MBradshaw | Maggie Bradshaw | HC / Haley & Aldrich | 5/6/22 | |
| Received by: Tdhc. | Tokala Christensen | F+B | 5/6/22 | 14:38 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4°C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

205113

# SAMPLE CHAIN OF CUSTODY

05-06-22 CI3 / D03

Page # 3 of 10

Report To Maggie Goodwin

Company HC / Haley & Aldrich

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: KOSMOS

PO #: 0202032-001

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-25-S4-1S | 21 AF | 5/5/22 | 1221 | Soil | 6 | X | X | | | | X | | | | | | arsenic, barium, cadmium, chromium III, chromium VI, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-26-S1-2.5 | 22 | " | 1332 | " | " | X | X | | | X | X | | X | | | | |
| TP-26-S2-5 | 23 | " | 1343 | " | " | X | X | | | | X | | | X | | | |
| TP-26-S3-10 | 24 | " | 1353 | " | " | | | | | | | | | | | | |
| TP-26-S4-15 | 25 | " | 1409 | " | " | | | | | | | | | | | | |
| TP-28-S1-5 | 26 | " | 1325 | " | " | X | X | | | | X | | | X | | | |
| TP-28-S2-10 | 27 | " | 1335 | " | " | X | | | | | | | | | | | |
| TP-30-S1-5 | 28 | " | 1230 | " | " | X | X | | | | X | | | X | | | |
| TP-30-S2-10 | 29 | " | 1245 | " | " | X | | | | | | | | | | | |
| TP-31-S1-2.5 | 30 | 5/3/22 | 1500 | " | " | X | | | | | X | | | X | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Maggie Bradshaw | HC / Haley & Aldrich | 5/6/22 | |
| Received by: | Tokala Christensen | F+B | 5/6/22 | 1438 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4 °C | | |

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205113

# SAMPLE CHAIN OF CUSTODY

05-06-22 cl3 | D03

Page # 4 of 10

Report To Angie Goodwin

Company Hc / HA

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*): MBradshaw

PROJECT NAME: KOSMOS

PO #: 02028832-001

REMARKS: Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-31-S2-5 | 31 A-F | 5/3/22 | 1525 | Soil | 6 | X | | | | | | | | | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-32-S1-2.5 MS/MSD needed | 32 | | 1350 | | | X | | | | | X | | | X | | | |
| TP-32-S2-5 | 33 | | 1400 | | | X | | | | | | | | | | | |
| TP-33-S1-2.5 | 34 | | 1130 | | | X | X | | | | X | | | X | | | |
| TP-33-S2-5 | 35 | | 1145 | | | X | | | | | | | | | | | |
| TP-34-S1-2.5 | 36 | | 0945 | | | X | X | | | X | X | | X | X | | | |
| TP-34-S2-5 | 37 | | 1020 | | | X | X | | | X | X | | | | | | |
| TP-34-S3-10 | 38 | | 1040 | | | | | | | | | | | | | | |
| TP-35-S1-5 | 39 | | 0830 | | | X | | | | | | | | | | | |
| TP-35-S2-10 | 40 | | 0845 | | | X | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: MBradshaw | Maggie Bradshaw | Hc/HA | 5/6/22 | |
| Received by: TChristensen | Takala Christensen | F+B | 5/6/22 | 14:38 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4°C | | |

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205113

# SAMPLE CHAIN OF CUSTODY

05.06.22 CI3/D03 Page # 5 of 10

Report To Angie Baldwin

Company HC/HA

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: KOSMOS

PO #: 0202332-001

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-36-S1-3.5 | 41 A-F | 5/2/22 | 1623 | soil | 6 | X | X | | | X | X | | X | X | | | |
| TP-36-S2-10.5 | 42 | 5/2/22 | 1655 | | | X | X | | | | X | | | | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-36B-S1-5 | 43 | 5/3/22 | 0730 | | | X | X | | | X | X | | | X | | | |
| TP-36B-S2-10 | 44 | 5/3/22 | 0750 | | | X | | | | | | | | | | | |
| TP-37-S1-2.5 | 45 | 5/2/22 | 1225 | | | X | X | | | | X | | | X | | | |
| TP-37-S2-5 | 46 | 5/2/22 | 1237 | | | X | | | | | | | | | | | |
| TP-39-S1-2.5 | 47 | | 1410 | | | X | X | | | | X | | | X | | | |
| TP-39-S2-5 | 48 | | 1410 | | | X | | | | | | | | | | | |
| TP-40-S1-5 | 49 | | 1430 | | | X | X | | | | X | | | X | | | |
| TP-40-S2-10 | 50 | | 1500 | | | X | | | | | | | | | | | |

ANALYSES REQUESTED

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Maggie Baldwin | HC/HA | 5/6/22 | |
| Received by: | Tokala Christensen | F+B | 5/6/22 | 14:38 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

205113

# SAMPLE CHAIN OF CUSTODY

05.06.22 CD3 / DO3

Page # 6 of 10

Report to Angie Goodwin

Company HC / AA

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*) MBradshaw

PROJECT NAME: KOSMOS

PO #: 0202032-001

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-41-S1-5 | 51 A-F | 5/2/22 | 1130 | Soil | 6 | X | X | | | | X | | | X | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-41-S2-10 | 52 | 5/2/22 | 1230 | | | X | | | | | | | | | | | |
| TP-43-S1-5 | 53 | 5/3/22 | 1010 | | | | | | | | | | | | | | |
| TP-43-S2-7.5 | 54 | 5/3/22 | 1035 | | | X | X | | | | | | X | | | | |
| TP-43-S2-7.5D | 55 | | 1130 | | | X | X | | | | X | | | X | | | |
| TP-43-S3-10 | 56 | | 1110 | | | X | | | | X | X | | | X | | | |
| TP-43-S3-1000 | 57 | | 1115 | | | X | | | | X | X | | | X | | | Labelled TP-43-S3000-10 MD GTP |
| TP-43-S4-14 | 58 | | 1050 | | | X | X | | | X | X | | X | X | | | |
| TP-44-S1-5 | 59 | | 1625 | | | X | X | | | | | | X | | | | |
| TP-44-S2-10 | 60 | | 1650 | | | X | X | | | X | X | | X | X | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: MBradshaw | Maggie Bradshaw | HC / HA | 5/6/22 | |
| Received by: Tdchristensen | Tonia Christensen | F+B | 5/6/22 | 14:38 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

205113

# SAMPLE CHAIN OF CUSTODY

05.06.22 CI3/D03

Page # 7 of 10

Report To Angie Goodwin

Company HC / HA

Address

City, State, ZIP

Phone Email

SAMPLERS (signature) MBradshaw

PROJECT NAME: POSMOS

PO #: 020832-001

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-44-S3-15 | 61 A-F | 5/3/22 | 1715 | Soil | 6 | X | X | | | X | X | | | | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-46-S1-5 | 62 | 5/2/22 | 1555 | | | X | X | | | | X | | | X | | | |
| TP-46-S2-10 | 63 | 5/2/22 | 1615 | | | X | | | | | | | | | | | |
| TP-47-S1-5 | 64 | 5/3/22 | 1250 | | | X | X | | | X | X | | X | X | | | |
| TP-47-S2-10 | 65 | | 1315 | | | X | X | | | X | X | | | X | | | |
| TP-47-S3-15 | 66 | | 1335 | | | | | | | | | | | | | | |
| TP-48-S1-5 | 67 | | 1430 | | | X | X | | | X | X | | X | X | | | |
| TP-48-S1-5 DUPLICATE | 68 | | 1500 | | | X | X | | | X | X | | | X | | | |
| TP-48-S2-10 | 69 | | 1450 | | | X | | | | | | | X | | | | |
| TP-48-S3-15 | 70 | | 1545 | | | X | X | | | X | X | | | X | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: MBradshaw | Maggie Bradshaw | HC/HA | 5/6/22 | |
| Received by: Tokala C. | Tokala Christensen | F+B | 5/6/22 | 14:38 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4 °C | | |


*Friedman & Bruya, Inc.*

*3012 16th Avenue West*

*Seattle, WA 98119-2029*

*Ph. (206) 285-8282*

205113

# SAMPLE CHAIN OF CUSTODY

05.06.22 CD3/D03

Page # 8 of 10

Report To ~~Angie~~ Maggie Goodwin

Company HC/HA

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*) MBradshaw

PROJECT NAME: KOSMOS

PO #: 0202832-001

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-49-S1-2.5 | 71 A-F | 5/3/22 | 1625 | Soil | 6 | X | X | | | X | | | X | | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-49-S2-5 | 72 | 5/3/22 | 1645 | | | X | X | | | X | X | | X | | | | |
| TP-49-S3-7.5 | 73 | 5/3/22 | 1700 | | | X | X | | | X | | | X | | | | |
| TP-49-S4-10 | 77 | 5/3/22 | 1710 | | | X | X | | | X | X | | X | X | | | |
| TP-49-S5-18 | 75 | 5/3/22 | 1800 | | | X | X | | | X | X | | X | X | | | |
| TP-54-S1-5 | 76 | 5/2/22 | 1320 | | | X | | | | | | | | | | | |
| TP-54-S2-10 | 77 A-F | 5/2/22 | 1330 | | | X | X | | | X | | | | X | | | |
| TP-55-S1-2.5 | 78 | 5/4/22 | 0740 | | | X | X | | | X | X | | X | X | | | |
| TP-55-S2-5 | 79 | 5/4/22 | 0800 | | | X | X | | | | | | X | | | | |
| TP-55-S3-10 | 80 | 5/4/22 | 0825 | | | X | X | | | | | | X | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: MBradshaw | Maggie Bradshaw | HC/HA | 5/6/22 | |
| Received by: | Takara Christensen | F+B | 5/6/22 | 14:38 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*

205113

# SAMPLE CHAIN OF CUSTODY

05.06.22 CJ3/DO3

Page # 9 of 10

Report To Maggie Goodwin

Company HC/HA

Address

City, State, ZIP

Phone Email

SAMPLERS (signature) MBradshaw

PROJECT NAME: KOSMOS

PO #: 0202832-001

REMARKS: Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-55-S4-1.5 | 81 A-B | 5/4/22 | 0850 | Soil | 6 | X | X | | | X | X | | X | X | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-56-S1-2.5 | 82 | 5/5/22 | 0905 | | | X | | | | | | | | | | | |
| TP-56-S2-5 | 83 | | 0914 | | | X | | | | | | | | | | | |
| TP-56-S3-10 | 84 | | 0929 | | | X | | | | | | | | | | | |
| TP-56-S4-1.5 | 85 | | 0939 | | | X | X | | | X | X | | | X | | | |
| TP-57-S4-1.5 | 86 | | 0745 | | | X | X | | | X | X | | | X | | | |
| TP-57-S2-10 | 87 A-B | | 0810 | | 2 | X (ND) | X | | | | | | | | | | |
| TP-58-S1-2.5 | 88 A-F | | 0742 | | | X | X | | | | | | | | | | |
| TP-58-S2-5 | 89 | | 0750 | | | X | X | | | X | X | | | X | | | |
| TP-58-S3-10 | 90 | | 0759 | | | X | X | | | | | | | | | | labeled TP-58-S3-B |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: MBradshaw | Maggie Bradshaw | HC/HA | 5/6/22 | |
| Received by: | Tokala Christensen | F+B | 5/6/22 | 14:38 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*

205113

# SAMPLE CHAIN OF CUSTODY

05.06.22 CI3/D03

Page # 10 of 10

Report To Angie Goodwin

Company HC / HA

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*) MBradshaw

PROJECT NAME: KOSMOS

PO #: 0202832-001

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-58-S4-13 | 91 A-F | 5/5/22 | 0809 | Soil | 6 | X | X | | | X | X | | | | | | |
| TP-59-S1-5 | 92 | 5/4/22 | 1015 | | | X | X | | | X | X | | X | X | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-59-S2-10 | 93 | 5/4/22 | 1045 | | | X | X | | | X | X | | X | | | | |
| TP-59-S3-15 | 94 | 5/4/22 | 1115 | | | X | X | | | X | X | | X | X | | | |
| TP-60-S1-5 | 95 | 5/5/22 | 0850 | | | X | X | | | X | X | | | X | | | |
| TP-60-S2-10 | 96 | 5/5/22 | 0915 | | | X | | | | | | | | | | | |
| TP-61-S1-5 | 97 | 5/5/22 | 0950 | | | X | X | | | X | X | | | X | | | |
| TP-61-S2-10 | 98 | 5/5/22 | 1010 | ↓ | ↓ | X | | | | | | | | | | | |
| TP-18-S1-5 | 99 | 5/4/22 | 1415 | Soil | 6 | X | | | | | | | | | | | Added at lab |
| TP-18-S2-10 | 100 | 5/4/22 | 1440 | ↓ | 6 | X | | | | | X | | | | | | (NP) 5/9/22 |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: MBradshaw | Maggie Bradshaw | HC / HA | 5/6/22 | |
| Received by: Tokala C. | Tokala Christensen | F+B | 5/6/22 | 14:38 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4°C | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*

# SAMPLE CHAIN OF CUSTODY

05-06-22

205113

Report To Angie Goodwin

Company Hart & Crowser

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

| PROJECT NAME | PO# |
|---|---|
| Komos | 0202832-001 |
| REMARKS: coc generated at lab (DP) 5/9/22 Project specific RLs? - Yes / No | INVOICE TO |

Page # 11 of CD3/D03

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-19-S1-5 | 101 A-F | 5/4/22 | 1520 | Soil | 6 | X | | | | | | | | | | | |
| TP-19-S2-10 | 102 | | 1540 | | | X | | | | | X | | | X | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-20-S1-5 | 103 | | 1625 | | | X | X | | | | | | X | | | | |
| TP-20-S1-10 | 104 | | 1650 | | | X | | | | | X | | | | | | |
| TP-23-S1-5 | 105 | | 1725 | | | X | | | | | | | | | | | |
| TP-23-S2-10 | 106 | | 1740 | | | X | X | | | X | X | | | X | | | |
| TP-27-S1-5 | 107 | | 1615 | | | X | X | | | | X | | | X | | | |
| TP-27-S2-10 | 108 | | 1640 | | | X | | | | | | | | | | | |
| TP-29-S1-5 | 109 | | 1700 | | | X | X | | | X | X | | X | X | | | |
| TP-29-S2-10 | 110 | | 1740 | | | X | X | | | | X | | | | | | |

ANALYSES REQUESTED

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | | | | |
| Received by: | Dhan Phan | FEBI | 5/6/22 | 1438 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4°C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

# SAMPLE CHAIN OF CUSTODY

205113

Report To Angie Goodwin

Company Hart & Crowser

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*) 05-06-22

PROJECT NAME: Komos

PO#: 02-02832-001

REMARKS: Coc generated at lab

Project specific RLs? - Yes / No

INVOICE TO: 5/9/22 NP

Page # 12 of 13 / D03

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-38-S1-2.5 | 111 A-F | 5/4/22 | 1110 | Soil | 6 | X | | | | | | | | | | | |
| TP-38-S2-5.0 | 112 | ↓ | 1125 | ↓ | ↓ | X | X | | | | X | | | X | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-38-S3-10.0 | 113 | | 1130 | | | X | X | | | | X | | | X | | | |
| TP-42-S1-2.5 | 114 | 5/4/22 | 1310 | | | X | X | | | X | X | | X | X | | | |
| TP-51-S3-15 | 115 | 5/4/22 | 1325 | | | X | | | | | | | | | | | |
| TP-42-S2-5 | 116 | | 1340 | | | X | X | | | | | | X | | | | |
| TP-42-S3-10 | 117 | | 1350 | | | X | X | | | | X | | | | | | |
| TP-45-S1-5 | 118 | | 1425 | | | X | X | | | | X | | | X | | | |
| TP-45-S2-7.5 | 119 | | 1445 | | | | | | | | | | | | | | |
| TP-45-S3-10 | 120 | | 1525 | | | X | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | | | | |
| Received by: | Nhan Pham | FeBT | 5/6/22 | 1938 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

205113

SAMPLE CHAIN OF CUSTODY

Report To Angie Goodwin

Company Hart & Crowser

Address

City, State, ZIP

Phone Email

SAMPLERS (signature) 05-06-22 (23) (03)

PROJECT NAME: Komos

PO#: 02 02832_001

REMARKS: coc generated at lab

Project specific RLs? - Yes / No

INVOICE TO: 5/9/22 (NP)

Page # 13 of

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-51-S1-5 | 121 A-F | 5/4/22 | 1250 | soil | 6 | X | X | | | X | X | | X | X | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-51-S2-10 | 122 | | 1310 | | | X | X | | | X | | | X | | | | |
| TP-51-S100-5 | 123 | | 1240 | | | X | X | | | X | X | | X | X | | | |
| TP-52-S1-5 | 124 | | 0805 | | | X | X | | | | X | | | X | | | |
| TP-52-S3-15 | 125 | | 0855 | | | X | | | | | | | | | | | |
| TP-50-S1-5 | 126 | | 1110 | | | X | X | | | | X | | | | | | |
| TP-48-S2-10B | 127 | 5/3/22 | 1520 | | | X | X | | | | | | | | | | |
| TP-52-S2-10 | 128 | 5/4/22 | 0840 | | | | | | | | | | | | | | |
| TP-53-S1-5 | 124 | 5/4/22 | 1000 | | | X | X | | | | | | | | | | |
| TP-53-S2-10 | 130 | 05/04/22 | 1015 | | | X | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | | | | |
| Received by: | Nhan Phan | FEBI | 5/6/22 | 1438 |
| Relinquished by: ASN | Andrew Nakahara | Haley & Aldrich | 5/11/22 | 1600 |
| Received by: | | Samples received at: 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

# SAMPLE CHAIN OF CUSTODY

2051 13 05-06-22 CD3/DD3

Report To Angie Goudwin
Company Hart & Crowser
Address
City, State, ZIP
Phone Email

SAMPLERS (signature)

PROJECT NAME: 62 Kamos
PO#: 02-02832-001

REMARKS: coc generated at kb
Project specific RLs? - Yes / No (NA)

INVOICE TO: 5/9/22

Page # 14 of

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES-REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-50-52-10 | 131 A-F | 5/4/22 | 1125 | Soil | 6 | X | | | | | | | | | | | arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc |
| TP-43-S300-10 | 132 A-B | 5/3/22 | 1115 | | 2 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

Same Sample as TP-43-S3-1000

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | | | | |
| Received by: | Nhan Pham | FEBT | 5/6/22 | 1438 |
| Relinquished by: | | | | |
| Received by: | | | 4°C | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

# SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 205113 CLIENT Hart Crowser INITIALS/ DATE: TWC 05/06/22

If custody seals are present on cooler, are they intact? ☒ NA ☐ YES ☐ NO

Cooler/Sample temperature 4 °C

Were samples received on ice/cold packs? ☒ YES ☐ NO

How did samples arrive? ☒ Over the Counter ☐ Picked up by F&BI ☐ FedEx/UPS/GSO

Number of days samples have been sitting prior to receipt at laboratory 1 > 4 days

Is there a Chain-of-Custody* (COC)? ☒ YES ☐ NO
*or other representative documents, letters, and/or shipping memos

Are the samples clearly identified? (explain "no" answer below) ☐ YES ☒ NO

Is the following information provided on the COC* ? (explain "no" answer below)

| | | | | | |
|---|---|---|---|---|---|
| Sample ID's | ☐ Yes | ☒ No | # of Containers | ☐ Yes | ☒ No |
| Date Sampled | ☐ Yes | ☒ No | Relinquished | ☒ Yes | ☐ No |
| Time Sampled | ☐ Yes | ☒ No | Requested analysis | ☐ Yes | ☒ No |

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☒ YES ☐ NO

Were appropriate sample containers used? ☒ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☒ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☒ NA ☐ YES ☐ NO

Air Samples: Were any additional canisters received? ☒ NA ☐ YES ☐ NO

If Yes, number of unused 1L canisters _____

number of unused 6L canisters _____

Explain "no" items from above (use the back if needed)

times not match COC * Page 11 > 14 coc generated at lab.

labels not match COC

samples not on COC

TP-54 S2-10 label smeared

~~TP-58~~ TP-57-S2-10 did not received 402.

ID on label TP-59-S1-5 two VOAs labeled TP-57-S1-5

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 205113**
**Work Order Number: 2205254**

June 07, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 38 sample(s) on 5/12/2022 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***
***Sample Moisture (Percent Moisture)***
***Volatile Petroleum Hydrocarbons by NWVPH***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *06/07/2022*

**CLIENT:** Friedman & Bruya
**Project:** 205113
**Work Order:** 2205254

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2205254-001 | TP-21-S1-5 | 05/05/2022 2:25 PM | 05/12/2022 1:32 PM |
| 2205254-002 | TP-21-S2-10 | 05/05/2022 2:40 PM | 05/12/2022 1:32 PM |
| 2205254-003 | TP-21-S200-10 | 05/05/2022 2:45 PM | 05/12/2022 1:32 PM |
| 2205254-004 | TP-21-S3-15 | 05/05/2022 3:10 PM | 05/12/2022 1:32 PM |
| 2205254-005 | TP-22-S1-5 | 05/05/2022 10:17 AM | 05/12/2022 1:32 PM |
| 2205254-006 | TP-24-S1-2.5 | 05/05/2022 11:15 AM | 05/12/2022 1:32 PM |
| 2205254-007 | TP-24-S100-2.5 | 05/05/2022 11:15 AM | 05/12/2022 1:32 PM |
| 2205254-008 | TP-24-S2-5 | 05/05/2022 3:01 PM | 05/12/2022 1:32 PM |
| 2205254-009 | TP-25S-S1-2.5 | 05/05/2022 11:51 AM | 05/12/2022 1:32 PM |
| 2205254-010 | TP-26-S1-2.5 | 05/05/2022 1:32 PM | 05/12/2022 1:32 PM |
| 2205254-011 | TP-34-S1-2.5 | 05/03/2022 9:45 AM | 05/12/2022 1:32 PM |
| 2205254-012 | TP-36-S1-3.5 | 05/02/2022 4:23 PM | 05/12/2022 1:32 PM |
| 2205254-013 | TP-43-S2-7.5 | 05/03/2022 10:35 AM | 05/12/2022 1:32 PM |
| 2205254-014 | TP-43-S4-14 | 05/03/2022 10:50 AM | 05/12/2022 1:32 PM |
| 2205254-015 | TP-44-S1-5 | 05/03/2022 4:25 PM | 05/12/2022 1:32 PM |
| 2205254-016 | TP-44-S2-10 | 05/03/2022 4:50 PM | 05/12/2022 1:32 PM |
| 2205254-017 | TP-47-S1-5 | 05/03/2022 12:50 PM | 05/12/2022 1:32 PM |
| 2205254-018 | TP-48-S1-5 | 05/03/2022 2:30 PM | 05/12/2022 1:32 PM |
| 2205254-019 | TP-48-S2-10 | 05/03/2022 2:50 PM | 05/12/2022 1:32 PM |
| 2205254-020 | TP-49-S1-2.5 | 05/03/2022 4:25 PM | 05/12/2022 1:32 PM |
| 2205254-021 | TP-49-S2-5 | 05/03/2022 4:45 PM | 05/12/2022 1:32 PM |
| 2205254-022 | TP-49-S3-7.5 | 05/03/2022 5:00 PM | 05/12/2022 1:32 PM |
| 2205254-023 | TP-49-S4-10 | 05/03/2022 5:10 PM | 05/12/2022 1:32 PM |
| 2205254-024 | TP-49-S5-18 | 05/03/2022 6:00 PM | 05/12/2022 1:32 PM |
| 2205254-025 | TP-55-S1-2.5 | 05/04/2022 7:40 AM | 05/12/2022 1:32 PM |
| 2205254-026 | TP-55-S2-5 | 05/04/2022 8:00 AM | 05/12/2022 1:32 PM |
| 2205254-027 | TP-55-S3-10 | 05/04/2022 8:25 AM | 05/12/2022 1:32 PM |
| 2205254-028 | TP-55-S4-15 | 05/04/2022 8:50 AM | 05/12/2022 1:32 PM |
| 2205254-029 | TP-59-S1-5 | 05/04/2022 10:15 AM | 05/12/2022 1:32 PM |
| 2205254-030 | TP-59-S2-10 | 05/04/2022 10:45 AM | 05/12/2022 1:32 PM |
| 2205254-031 | TP-59-S3-15 | 05/04/2022 11:15 AM | 05/12/2022 1:32 PM |
| 2205254-032 | TP-20-S1-5 | 05/04/2022 4:25 PM | 05/12/2022 1:32 PM |
| 2205254-033 | TP-29-S1-5 | 05/04/2022 5:00 PM | 05/12/2022 1:32 PM |
| 2205254-034 | TP-42-S1-2.5 | 05/04/2022 1:10 PM | 05/12/2022 1:32 PM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

| | |
|---|---|
| **CLIENT:** | Friedman & Bruya |
| **Project:** | 205113 |
| **Work Order:** | 2205254 |

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2205254-035 | TP-42-S2-5 | 05/04/2022 1:40 PM | 05/12/2022 1:32 PM |
| 2205254-036 | TP-51-S1-5 | 05/04/2022 12:50 PM | 05/12/2022 1:32 PM |
| 2205254-037 | TP-51-S2-10 | 05/04/2022 1:10 PM | 05/12/2022 1:32 PM |
| 2205254-038 | TP-51-S100-5 | 05/04/2022 12:40 PM | 05/12/2022 1:32 PM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2205254**
Date: **6/7/2022**

**CLIENT:** Friedman & Bruya
**Project:** 205113

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-001
**Client Sample ID:** **TP-21-S1-5**

**Collection Date:** 5/5/2022 2:25:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 28.9 | | mg/Kg-dry | 1 | 5/31/2022 11:51:26 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 14.5 | | mg/Kg-dry | 1 | 5/31/2022 11:51:26 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 14.5 | | mg/Kg-dry | 1 | 5/31/2022 11:51:26 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 14.5 | | mg/Kg-dry | 1 | 5/31/2022 11:51:26 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 14.5 | | mg/Kg-dry | 1 | 5/31/2022 11:51:26 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 28.9 | | mg/Kg-dry | 1 | 5/31/2022 5:56:06 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 14.5 | | mg/Kg-dry | 1 | 5/31/2022 5:56:06 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 14.5 | | mg/Kg-dry | 1 | 5/31/2022 5:56:06 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 14.5 | | mg/Kg-dry | 1 | 5/31/2022 5:56:06 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 14.5 | | mg/Kg-dry | 1 | 5/31/2022 5:56:06 PM |
| Surr: 1-Chlorooctadecane | 57.9 | 50 - 150 | | %Rec | 1 | 5/31/2022 11:51:26 PM |
| Surr: o-Terphenyl | 82.3 | 50 - 150 | | %Rec | 1 | 5/31/2022 5:56:06 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36598 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 5.22 | H | mg/Kg-dry | 1 | 5/25/2022 7:26:21 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 3.13 | QH | mg/Kg-dry | 1 | 5/25/2022 7:26:21 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 5.22 | H | mg/Kg-dry | 1 | 5/25/2022 7:26:21 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 1.04 | H | mg/Kg-dry | 1 | 5/25/2022 7:26:21 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 6.26 | H | mg/Kg-dry | 1 | 5/25/2022 7:26:21 PM |
| Aromatic Hydrocarbon (C10-C12) | 1.92 | 1.04 | H | mg/Kg-dry | 1 | 5/25/2022 7:26:21 PM |
| Aromatic Hydrocarbon (C12-C13) | 5.70 | 1.04 | H | mg/Kg-dry | 1 | 5/25/2022 7:26:21 PM |
| Surr: 1,4-Difluorobenzene | 87.1 | 60 - 140 | H | %Rec | 1 | 5/25/2022 7:26:21 PM |
| Surr: Bromofluorobenzene | 83.4 | 60 - 140 | H | %Rec | 1 | 5/25/2022 7:26:21 PM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 35.6 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-002
**Client Sample ID:** **TP-21-S2-10**

**Collection Date:** 5/5/2022 2:40:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 21.7 | | mg/Kg-dry | 1 | 6/1/2022 12:15:06 AM |
| Aliphatic Hydrocarbon (C10-C12) | 24.6 | 10.9 | B | mg/Kg-dry | 1 | 6/1/2022 12:15:06 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.9 | | mg/Kg-dry | 1 | 6/1/2022 12:15:06 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.9 | | mg/Kg-dry | 1 | 6/1/2022 12:15:06 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.9 | | mg/Kg-dry | 1 | 6/1/2022 12:15:06 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 21.7 | | mg/Kg-dry | 1 | 5/31/2022 6:19:57 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.9 | | mg/Kg-dry | 1 | 5/31/2022 6:19:57 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.9 | | mg/Kg-dry | 1 | 5/31/2022 6:19:57 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 10.9 | | mg/Kg-dry | 1 | 5/31/2022 6:19:57 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.9 | | mg/Kg-dry | 1 | 5/31/2022 6:19:57 PM |
| Surr: 1-Chlorooctadecane | 64.2 | 50 - 150 | | %Rec | 1 | 6/1/2022 12:15:06 AM |
| Surr: o-Terphenyl | 95.0 | 50 - 150 | | %Rec | 1 | 5/31/2022 6:19:57 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36598 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.88 | H | mg/Kg-dry | 1 | 5/25/2022 8:47:59 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.73 | QH | mg/Kg-dry | 1 | 5/25/2022 8:47:59 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.88 | H | mg/Kg-dry | 1 | 5/25/2022 8:47:59 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.576 | H | mg/Kg-dry | 1 | 5/25/2022 8:47:59 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.46 | H | mg/Kg-dry | 1 | 5/25/2022 8:47:59 PM |
| Aromatic Hydrocarbon (C10-C12) | 1.56 | 0.576 | H | mg/Kg-dry | 1 | 5/25/2022 8:47:59 PM |
| Aromatic Hydrocarbon (C12-C13) | 2.09 | 0.576 | H | mg/Kg-dry | 1 | 5/25/2022 8:47:59 PM |
| Surr: 1,4-Difluorobenzene | 92.2 | 60 - 140 | H | %Rec | 1 | 5/25/2022 8:47:59 PM |
| Surr: Bromofluorobenzene | 89.5 | 60 - 140 | H | %Rec | 1 | 5/25/2022 8:47:59 PM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 24.4 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-003
**Client Sample ID:** **TP-21-S200-10**

**Collection Date:** 5/5/2022 2:45:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 22.9 | | mg/Kg-dry | 1 | 6/1/2022 12:38:37 AM |
| Aliphatic Hydrocarbon (C10-C12) | 13.8 | 11.4 | B | mg/Kg-dry | 1 | 6/1/2022 12:38:37 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 11.4 | | mg/Kg-dry | 1 | 6/1/2022 12:38:37 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 11.4 | | mg/Kg-dry | 1 | 6/1/2022 12:38:37 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 11.4 | | mg/Kg-dry | 1 | 6/1/2022 12:38:37 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 22.9 | | mg/Kg-dry | 1 | 5/31/2022 6:43:40 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 11.4 | | mg/Kg-dry | 1 | 5/31/2022 6:43:40 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 11.4 | | mg/Kg-dry | 1 | 5/31/2022 6:43:40 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 11.4 | | mg/Kg-dry | 1 | 5/31/2022 6:43:40 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 11.4 | | mg/Kg-dry | 1 | 5/31/2022 6:43:40 PM |
| Surr: 1-Chlorooctadecane | 68.1 | 50 - 150 | | %Rec | 1 | 6/1/2022 12:38:37 AM |
| Surr: o-Terphenyl | 110 | 50 - 150 | | %Rec | 1 | 5/31/2022 6:43:40 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36598 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.37 | H | mg/Kg-dry | 1 | 5/25/2022 9:28:35 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 2.02 | QH | mg/Kg-dry | 1 | 5/25/2022 9:28:35 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 3.37 | H | mg/Kg-dry | 1 | 5/25/2022 9:28:35 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.675 | H | mg/Kg-dry | 1 | 5/25/2022 9:28:35 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 4.05 | H | mg/Kg-dry | 1 | 5/25/2022 9:28:35 PM |
| Aromatic Hydrocarbon (C10-C12) | 0.764 | 0.675 | H | mg/Kg-dry | 1 | 5/25/2022 9:28:35 PM |
| Aromatic Hydrocarbon (C12-C13) | 1.82 | 0.675 | H | mg/Kg-dry | 1 | 5/25/2022 9:28:35 PM |
| Surr: 1,4-Difluorobenzene | 90.2 | 60 - 140 | H | %Rec | 1 | 5/25/2022 9:28:35 PM |
| Surr: Bromofluorobenzene | 84.5 | 60 - 140 | H | %Rec | 1 | 5/25/2022 9:28:35 PM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 24.8 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-004
**Client Sample ID:** **TP-21-S3-15**

**Collection Date:** 5/5/2022 3:10:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 21.1 | | mg/Kg-dry | 1 | 6/1/2022 1:49:17 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 10.6 | | mg/Kg-dry | 1 | 6/1/2022 1:49:17 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.6 | | mg/Kg-dry | 1 | 6/1/2022 1:49:17 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.6 | | mg/Kg-dry | 1 | 6/1/2022 1:49:17 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.6 | | mg/Kg-dry | 1 | 6/1/2022 1:49:17 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 21.1 | | mg/Kg-dry | 1 | 5/31/2022 7:54:53 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.6 | | mg/Kg-dry | 1 | 5/31/2022 7:54:53 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.6 | | mg/Kg-dry | 1 | 5/31/2022 7:54:53 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 10.6 | | mg/Kg-dry | 1 | 5/31/2022 7:54:53 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.6 | | mg/Kg-dry | 1 | 5/31/2022 7:54:53 PM |
| Surr: 1-Chlorooctadecane | 71.4 | 50 - 150 | | %Rec | 1 | 6/1/2022 1:49:17 AM |
| Surr: o-Terphenyl | 102 | 50 - 150 | | %Rec | 1 | 5/31/2022 7:54:53 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36598 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.02 | H | mg/Kg-dry | 1 | 5/25/2022 10:09:14 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.21 | QH | mg/Kg-dry | 1 | 5/25/2022 10:09:14 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.02 | H | mg/Kg-dry | 1 | 5/25/2022 10:09:14 PM |
| Aliphatic Hydrocarbon (C10-C12) | 0.591 | 0.404 | H | mg/Kg-dry | 1 | 5/25/2022 10:09:14 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 2.43 | H | mg/Kg-dry | 1 | 5/25/2022 10:09:14 PM |
| Aromatic Hydrocarbon (C10-C12) | 1.28 | 0.404 | H | mg/Kg-dry | 1 | 5/25/2022 10:09:14 PM |
| Aromatic Hydrocarbon (C12-C13) | 2.73 | 0.404 | H | mg/Kg-dry | 1 | 5/25/2022 10:09:14 PM |
| Surr: 1,4-Difluorobenzene | 90.7 | 60 - 140 | H | %Rec | 1 | 5/25/2022 10:09:14 PM |
| Surr: Bromofluorobenzene | 86.7 | 60 - 140 | H | %Rec | 1 | 5/25/2022 10:09:14 PM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 15.2 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-005
**Client Sample ID:** **TP-22-S1-5**

**Collection Date:** 5/5/2022 10:17:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 27.8 | | mg/Kg-dry | 1 | 6/1/2022 2:12:46 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 13.9 | | mg/Kg-dry | 1 | 6/1/2022 2:12:46 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 13.9 | | mg/Kg-dry | 1 | 6/1/2022 2:12:46 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.9 | | mg/Kg-dry | 1 | 6/1/2022 2:12:46 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 13.9 | | mg/Kg-dry | 1 | 6/1/2022 2:12:46 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 27.8 | | mg/Kg-dry | 1 | 5/31/2022 8:18:33 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.9 | | mg/Kg-dry | 1 | 5/31/2022 8:18:33 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.9 | | mg/Kg-dry | 1 | 5/31/2022 8:18:33 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 13.9 | | mg/Kg-dry | 1 | 5/31/2022 8:18:33 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.9 | | mg/Kg-dry | 1 | 5/31/2022 8:18:33 PM |
| Surr: 1-Chlorooctadecane | 58.1 | 50 - 150 | | %Rec | 1 | 6/1/2022 2:12:46 AM |
| Surr: o-Terphenyl | 83.7 | 50 - 150 | | %Rec | 1 | 5/31/2022 8:18:33 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36598 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.76 | H | mg/Kg-dry | 1 | 5/25/2022 10:49:57 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.66 | QH | mg/Kg-dry | 1 | 5/25/2022 10:49:57 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.76 | H | mg/Kg-dry | 1 | 5/25/2022 10:49:57 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.553 | H | mg/Kg-dry | 1 | 5/25/2022 10:49:57 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.32 | H | mg/Kg-dry | 1 | 5/25/2022 10:49:57 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 0.553 | H | mg/Kg-dry | 1 | 5/25/2022 10:49:57 PM |
| Aromatic Hydrocarbon (C12-C13) | 0.794 | 0.553 | H | mg/Kg-dry | 1 | 5/25/2022 10:49:57 PM |
| Surr: 1,4-Difluorobenzene | 88.1 | 60 - 140 | H | %Rec | 1 | 5/25/2022 10:49:57 PM |
| Surr: Bromofluorobenzene | 86.4 | 60 - 140 | H | %Rec | 1 | 5/25/2022 10:49:57 PM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 36.4 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-006
**Client Sample ID:** **TP-24-S1-2.5**

**Collection Date:** 5/5/2022 11:15:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | 63.2 | 27.0 | | mg/Kg-dry | 1 | 6/1/2022 2:36:25 AM |
| Aliphatic Hydrocarbon (C10-C12) | 239 | 13.5 | B | mg/Kg-dry | 1 | 6/1/2022 2:36:25 AM |
| Aliphatic Hydrocarbon (C12-C16) | 551 | 13.5 | | mg/Kg-dry | 1 | 6/1/2022 2:36:25 AM |
| Aliphatic Hydrocarbon (C16-C21) | 140 | 13.5 | | mg/Kg-dry | 1 | 6/1/2022 2:36:25 AM |
| Aliphatic Hydrocarbon (C21-C34) | 685 | 13.5 | | mg/Kg-dry | 1 | 6/1/2022 2:36:25 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 27.0 | | mg/Kg-dry | 1 | 5/31/2022 8:42:20 PM |
| Aromatic Hydrocarbon (C10-C12) | 13.8 | 13.5 | | mg/Kg-dry | 1 | 5/31/2022 8:42:20 PM |
| Aromatic Hydrocarbon (C12-C16) | 109 | 13.5 | | mg/Kg-dry | 1 | 5/31/2022 8:42:20 PM |
| Aromatic Hydrocarbon (C16-C21) | 189 | 13.5 | | mg/Kg-dry | 1 | 5/31/2022 8:42:20 PM |
| Aromatic Hydrocarbon (C21-C34) | 243 | 13.5 | | mg/Kg-dry | 1 | 5/31/2022 8:42:20 PM |
| Surr: 1-Chlorooctadecane | 60.3 | 50 - 150 | | %Rec | 1 | 6/1/2022 2:36:25 AM |
| Surr: o-Terphenyl | 74.7 | 50 - 150 | | %Rec | 1 | 5/31/2022 8:42:20 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36598 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.42 | H | mg/Kg-dry | 1 | 5/25/2022 11:30:45 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 2.05 | QH | mg/Kg-dry | 1 | 5/25/2022 11:30:45 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 3.42 | H | mg/Kg-dry | 1 | 5/25/2022 11:30:45 PM |
| Aliphatic Hydrocarbon (C10-C12) | 22.3 | 0.684 | H | mg/Kg-dry | 1 | 5/25/2022 11:30:45 PM |
| Aromatic Hydrocarbon (C8-C10) | 5.88 | 4.10 | H | mg/Kg-dry | 1 | 5/25/2022 11:30:45 PM |
| Aromatic Hydrocarbon (C10-C12) | 70.3 | 0.684 | H | mg/Kg-dry | 1 | 5/25/2022 11:30:45 PM |
| Aromatic Hydrocarbon (C12-C13) | 1,040 | 0.684 | EH | mg/Kg-dry | 1 | 5/25/2022 11:30:45 PM |
| Surr: 1,4-Difluorobenzene | 86.3 | 60 - 140 | H | %Rec | 1 | 5/25/2022 11:30:45 PM |
| Surr: Bromofluorobenzene | 90.1 | 60 - 140 | H | %Rec | 1 | 5/25/2022 11:30:45 PM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 31.2 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Collection Date:** 5/5/2022 11:15:00 AM
**Project:** 205113
**Lab ID:** 2205254-007
**Matrix:** Soil
**Client Sample ID:** **TP-24-S100-2.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | 51.5 | 29.2 | | mg/Kg-dry | 1 | 6/1/2022 2:59:53 AM |
| Aliphatic Hydrocarbon (C10-C12) | 250 | 14.6 | B | mg/Kg-dry | 1 | 6/1/2022 2:59:53 AM |
| Aliphatic Hydrocarbon (C12-C16) | 622 | 14.6 | | mg/Kg-dry | 1 | 6/1/2022 2:59:53 AM |
| Aliphatic Hydrocarbon (C16-C21) | 186 | 14.6 | | mg/Kg-dry | 1 | 6/1/2022 2:59:53 AM |
| Aliphatic Hydrocarbon (C21-C34) | 954 | 14.6 | | mg/Kg-dry | 1 | 6/1/2022 2:59:53 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 29.2 | | mg/Kg-dry | 1 | 5/31/2022 9:05:59 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 14.6 | | mg/Kg-dry | 1 | 5/31/2022 9:05:59 PM |
| Aromatic Hydrocarbon (C12-C16) | 107 | 14.6 | | mg/Kg-dry | 1 | 5/31/2022 9:05:59 PM |
| Aromatic Hydrocarbon (C16-C21) | 294 | 14.6 | | mg/Kg-dry | 1 | 5/31/2022 9:05:59 PM |
| Aromatic Hydrocarbon (C21-C34) | 356 | 14.6 | | mg/Kg-dry | 1 | 5/31/2022 9:05:59 PM |
| Surr: 1-Chlorooctadecane | 69.4 | 50 - 150 | | %Rec | 1 | 6/1/2022 2:59:53 AM |
| Surr: o-Terphenyl | 86.9 | 50 - 150 | | %Rec | 1 | 5/31/2022 9:05:59 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36598 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 4.14 | H | mg/Kg-dry | 1 | 5/26/2022 12:11:32 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 2.49 | QH | mg/Kg-dry | 1 | 5/26/2022 12:11:32 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 4.14 | H | mg/Kg-dry | 1 | 5/26/2022 12:11:32 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.828 | H | mg/Kg-dry | 1 | 5/26/2022 12:11:32 AM |
| Aromatic Hydrocarbon (C8-C10) | 9.02 | 4.97 | H | mg/Kg-dry | 1 | 5/26/2022 12:11:32 AM |
| Aromatic Hydrocarbon (C10-C12) | 135 | 0.828 | H | mg/Kg-dry | 1 | 5/26/2022 12:11:32 AM |
| Aromatic Hydrocarbon (C12-C13) | 1,900 | 0.828 | EH | mg/Kg-dry | 1 | 5/26/2022 12:11:32 AM |
| Surr: 1,4-Difluorobenzene | 86.2 | 60 - 140 | H | %Rec | 1 | 5/26/2022 12:11:32 AM |
| Surr: Bromofluorobenzene | 90.0 | 60 - 140 | H | %Rec | 1 | 5/26/2022 12:11:32 AM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 32.8 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-008
**Client Sample ID:** **TP-24-S2-5**

**Collection Date:** 5/5/2022 3:01:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 26.1 | | mg/Kg-dry | 1 | 6/2/2022 11:51:20 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 13.1 | | mg/Kg-dry | 1 | 6/2/2022 11:51:20 AM |
| Aliphatic Hydrocarbon (C12-C16) | 13.2 | 13.1 | | mg/Kg-dry | 1 | 6/2/2022 11:51:20 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.1 | | mg/Kg-dry | 1 | 6/2/2022 11:51:20 AM |
| Aliphatic Hydrocarbon (C21-C34) | 50.3 | 13.1 | | mg/Kg-dry | 1 | 6/2/2022 11:51:20 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 26.1 | | mg/Kg-dry | 1 | 6/3/2022 4:29:39 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.1 | | mg/Kg-dry | 1 | 6/3/2022 4:29:39 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.1 | | mg/Kg-dry | 1 | 6/3/2022 4:29:39 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 13.1 | | mg/Kg-dry | 1 | 6/3/2022 4:29:39 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.1 | | mg/Kg-dry | 1 | 6/3/2022 4:29:39 AM |
| Surr: 1-Chlorooctadecane | 85.2 | 50 - 150 | | %Rec | 1 | 6/2/2022 11:51:20 AM |
| Surr: o-Terphenyl | 102 | 50 - 150 | | %Rec | 1 | 6/3/2022 4:29:39 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36598 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.23 | H | mg/Kg-dry | 1 | 5/26/2022 12:52:18 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.34 | QH | mg/Kg-dry | 1 | 5/26/2022 12:52:18 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.23 | H | mg/Kg-dry | 1 | 5/26/2022 12:52:18 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.447 | H | mg/Kg-dry | 1 | 5/26/2022 12:52:18 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 2.68 | H | mg/Kg-dry | 1 | 5/26/2022 12:52:18 AM |
| Aromatic Hydrocarbon (C10-C12) | 1.02 | 0.447 | H | mg/Kg-dry | 1 | 5/26/2022 12:52:18 AM |
| Aromatic Hydrocarbon (C12-C13) | 25.2 | 0.447 | H | mg/Kg-dry | 1 | 5/26/2022 12:52:18 AM |
| Surr: 1,4-Difluorobenzene | 86.9 | 60 - 140 | H | %Rec | 1 | 5/26/2022 12:52:18 AM |
| Surr: Bromofluorobenzene | 84.9 | 60 - 140 | H | %Rec | 1 | 5/26/2022 12:52:18 AM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 27.9 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Collection Date:** 5/5/2022 11:51:00 AM
**Project:** 205113
**Lab ID:** 2205254-009
**Matrix:** Soil
**Client Sample ID:** **TP-25S-S1-2.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 26.8 | | mg/Kg-dry | 1 | 6/2/2022 12:15:15 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 13.4 | | mg/Kg-dry | 1 | 6/2/2022 12:15:15 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 13.4 | | mg/Kg-dry | 1 | 6/2/2022 12:15:15 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.4 | | mg/Kg-dry | 1 | 6/2/2022 12:15:15 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 13.4 | | mg/Kg-dry | 1 | 6/2/2022 12:15:15 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 26.8 | | mg/Kg-dry | 1 | 6/3/2022 5:16:56 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.4 | | mg/Kg-dry | 1 | 6/3/2022 5:16:56 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.4 | | mg/Kg-dry | 1 | 6/3/2022 5:16:56 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 13.4 | | mg/Kg-dry | 1 | 6/3/2022 5:16:56 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.4 | | mg/Kg-dry | 1 | 6/3/2022 5:16:56 AM |
| Surr: 1-Chlorooctadecane | 62.7 | 50 - 150 | | %Rec | 1 | 6/2/2022 12:15:15 PM |
| Surr: o-Terphenyl | 77.9 | 50 - 150 | | %Rec | 1 | 6/3/2022 5:16:56 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36598 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.36 | H | mg/Kg-dry | 1 | 5/26/2022 5:37:31 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 2.02 | QH | mg/Kg-dry | 1 | 5/26/2022 5:37:31 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 3.36 | H | mg/Kg-dry | 1 | 5/26/2022 5:37:31 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.672 | H | mg/Kg-dry | 1 | 5/26/2022 5:37:31 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 4.03 | H | mg/Kg-dry | 1 | 5/26/2022 5:37:31 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 0.672 | H | mg/Kg-dry | 1 | 5/26/2022 5:37:31 AM |
| Aromatic Hydrocarbon (C12-C13) | ND | 0.672 | H | mg/Kg-dry | 1 | 5/26/2022 5:37:31 AM |
| Surr: 1,4-Difluorobenzene | 86.2 | 60 - 140 | H | %Rec | 1 | 5/26/2022 5:37:31 AM |
| Surr: Bromofluorobenzene | 85.2 | 60 - 140 | H | %Rec | 1 | 5/26/2022 5:37:31 AM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 29.3 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-010
**Client Sample ID:** **TP-26-S1-2.5**

**Collection Date:** 5/5/2022 1:32:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 26.6 | | mg/Kg-dry | 1 | 6/2/2022 12:39:02 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 13.3 | | mg/Kg-dry | 1 | 6/2/2022 12:39:02 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 13.3 | | mg/Kg-dry | 1 | 6/2/2022 12:39:02 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.3 | | mg/Kg-dry | 1 | 6/2/2022 12:39:02 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 13.3 | | mg/Kg-dry | 1 | 6/2/2022 12:39:02 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 26.6 | | mg/Kg-dry | 1 | 6/3/2022 6:04:15 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.3 | | mg/Kg-dry | 1 | 6/3/2022 6:04:15 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.3 | | mg/Kg-dry | 1 | 6/3/2022 6:04:15 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 13.3 | | mg/Kg-dry | 1 | 6/3/2022 6:04:15 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.3 | | mg/Kg-dry | 1 | 6/3/2022 6:04:15 AM |
| Surr: 1-Chlorooctadecane | 57.6 | 50 - 150 | | %Rec | 1 | 6/2/2022 12:39:02 PM |
| Surr: o-Terphenyl | 79.1 | 50 - 150 | | %Rec | 1 | 6/3/2022 6:04:15 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36598 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.59 | H | mg/Kg-dry | 1 | 5/26/2022 6:18:12 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.55 | QH | mg/Kg-dry | 1 | 5/26/2022 6:18:12 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.59 | H | mg/Kg-dry | 1 | 5/26/2022 6:18:12 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.518 | H | mg/Kg-dry | 1 | 5/26/2022 6:18:12 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.11 | H | mg/Kg-dry | 1 | 5/26/2022 6:18:12 AM |
| Aromatic Hydrocarbon (C10-C12) | 1.18 | 0.518 | H | mg/Kg-dry | 1 | 5/26/2022 6:18:12 AM |
| Aromatic Hydrocarbon (C12-C13) | 2.18 | 0.518 | H | mg/Kg-dry | 1 | 5/26/2022 6:18:12 AM |
| Surr: 1,4-Difluorobenzene | 88.1 | 60 - 140 | H | %Rec | 1 | 5/26/2022 6:18:12 AM |
| Surr: Bromofluorobenzene | 85.8 | 60 - 140 | H | %Rec | 1 | 5/26/2022 6:18:12 AM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 29.2 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Collection Date:** 5/3/2022 9:45:00 AM
**Project:** 205113
**Lab ID:** 2205254-011
**Matrix:** Soil
**Client Sample ID:** **TP-34-S1-2.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | 50.3 | 23.3 | | mg/Kg-dry | 1 | 6/2/2022 1:02:51 PM |
| Aliphatic Hydrocarbon (C10-C12) | 224 | 11.7 | B | mg/Kg-dry | 1 | 6/2/2022 1:02:51 PM |
| Aliphatic Hydrocarbon (C12-C16) | 557 | 11.7 | | mg/Kg-dry | 1 | 6/2/2022 1:02:51 PM |
| Aliphatic Hydrocarbon (C16-C21) | 250 | 11.7 | | mg/Kg-dry | 1 | 6/2/2022 1:02:51 PM |
| Aliphatic Hydrocarbon (C21-C34) | 535 | 11.7 | | mg/Kg-dry | 1 | 6/2/2022 1:02:51 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 23.3 | | mg/Kg-dry | 1 | 6/3/2022 6:51:22 AM |
| Aromatic Hydrocarbon (C10-C12) | 14.3 | 11.7 | | mg/Kg-dry | 1 | 6/3/2022 6:51:22 AM |
| Aromatic Hydrocarbon (C12-C16) | 124 | 11.7 | | mg/Kg-dry | 1 | 6/3/2022 6:51:22 AM |
| Aromatic Hydrocarbon (C16-C21) | 505 | 11.7 | | mg/Kg-dry | 1 | 6/3/2022 6:51:22 AM |
| Aromatic Hydrocarbon (C21-C34) | 195 | 11.7 | | mg/Kg-dry | 1 | 6/3/2022 6:51:22 AM |
| Surr: 1-Chlorooctadecane | 71.0 | 50 - 150 | | %Rec | 1 | 6/2/2022 1:02:51 PM |
| Surr: o-Terphenyl | 114 | 50 - 150 | | %Rec | 1 | 6/3/2022 6:51:22 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.09 | | mg/Kg-dry | 1 | 5/16/2022 11:36:13 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.85 | | mg/Kg-dry | 1 | 5/16/2022 11:36:13 PM |
| Aliphatic Hydrocarbon (C8-C10) | 17.2 | 3.09 | | mg/Kg-dry | 1 | 5/16/2022 11:36:13 PM |
| Aliphatic Hydrocarbon (C10-C12) | 88.0 | 0.617 | | mg/Kg-dry | 1 | 5/16/2022 11:36:13 PM |
| Aromatic Hydrocarbon (C8-C10) | 41.3 | 3.70 | | mg/Kg-dry | 1 | 5/16/2022 11:36:13 PM |
| Aromatic Hydrocarbon (C10-C12) | 500 | 0.617 | | mg/Kg-dry | 1 | 5/16/2022 11:36:13 PM |
| Aromatic Hydrocarbon (C12-C13) | 1,630 | 0.617 | Q | mg/Kg-dry | 1 | 5/16/2022 11:36:13 PM |
| Surr: 1,4-Difluorobenzene | 91.5 | 60 - 140 | | %Rec | 1 | 5/16/2022 11:36:13 PM |
| Surr: Bromofluorobenzene | 152 | 60 - 140 | S | %Rec | 1 | 5/16/2022 11:36:13 PM |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 21.6 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-012
**Client Sample ID:** **TP-36-S1-3.5**

**Collection Date:** 5/2/2022 4:23:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 30.7 | | mg/Kg-dry | 1 | 6/2/2022 4:37:00 PM |
| Aliphatic Hydrocarbon (C10-C12) | 106 | 15.3 | B | mg/Kg-dry | 1 | 6/2/2022 4:37:00 PM |
| Aliphatic Hydrocarbon (C12-C16) | 211 | 15.3 | | mg/Kg-dry | 1 | 6/2/2022 4:37:00 PM |
| Aliphatic Hydrocarbon (C16-C21) | 167 | 15.3 | | mg/Kg-dry | 1 | 6/2/2022 4:37:00 PM |
| Aliphatic Hydrocarbon (C21-C34) | 157 | 15.3 | | mg/Kg-dry | 1 | 6/2/2022 4:37:00 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 30.7 | | mg/Kg-dry | 1 | 6/3/2022 7:38:36 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 15.3 | | mg/Kg-dry | 1 | 6/3/2022 7:38:36 AM |
| Aromatic Hydrocarbon (C12-C16) | 39.3 | 15.3 | | mg/Kg-dry | 1 | 6/3/2022 7:38:36 AM |
| Aromatic Hydrocarbon (C16-C21) | 206 | 15.3 | | mg/Kg-dry | 1 | 6/3/2022 7:38:36 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 15.3 | | mg/Kg-dry | 1 | 6/3/2022 7:38:36 AM |
| Surr: 1-Chlorooctadecane | 65.4 | 50 - 150 | | %Rec | 1 | 6/2/2022 4:37:00 PM |
| Surr: o-Terphenyl | 102 | 50 - 150 | | %Rec | 1 | 6/3/2022 7:38:36 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.41 | H | mg/Kg-dry | 1 | 5/17/2022 12:58:50 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 2.04 | H | mg/Kg-dry | 1 | 5/17/2022 12:58:50 AM |
| Aliphatic Hydrocarbon (C8-C10) | 5.69 | 3.41 | H | mg/Kg-dry | 1 | 5/17/2022 12:58:50 AM |
| Aliphatic Hydrocarbon (C10-C12) | 77.2 | 0.682 | H | mg/Kg-dry | 1 | 5/17/2022 12:58:50 AM |
| Aromatic Hydrocarbon (C8-C10) | 26.3 | 4.09 | H | mg/Kg-dry | 1 | 5/17/2022 12:58:50 AM |
| Aromatic Hydrocarbon (C10-C12) | 390 | 0.682 | H | mg/Kg-dry | 1 | 5/17/2022 12:58:50 AM |
| Aromatic Hydrocarbon (C12-C13) | 1,030 | 0.682 | QH | mg/Kg-dry | 1 | 5/17/2022 12:58:50 AM |
| Surr: 1,4-Difluorobenzene | 86.4 | 60 - 140 | H | %Rec | 1 | 5/17/2022 12:58:50 AM |
| Surr: Bromofluorobenzene | 93.0 | 60 - 140 | H | %Rec | 1 | 5/17/2022 12:58:50 AM |

**NOTES:**
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 38.0 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-013
**Client Sample ID:** **TP-43-S2-7.5**

**Collection Date:** 5/3/2022 10:35:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 28.8 | | mg/Kg-dry | 1 | 6/2/2022 2:14:28 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 14.4 | | mg/Kg-dry | 1 | 6/2/2022 2:14:28 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 14.4 | | mg/Kg-dry | 1 | 6/2/2022 2:14:28 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 14.4 | | mg/Kg-dry | 1 | 6/2/2022 2:14:28 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 14.4 | | mg/Kg-dry | 1 | 6/2/2022 2:14:28 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 28.8 | | mg/Kg-dry | 1 | 6/3/2022 8:02:09 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 14.4 | | mg/Kg-dry | 1 | 6/3/2022 8:02:09 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 14.4 | | mg/Kg-dry | 1 | 6/3/2022 8:02:09 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 14.4 | | mg/Kg-dry | 1 | 6/3/2022 8:02:09 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 14.4 | | mg/Kg-dry | 1 | 6/3/2022 8:02:09 AM |
| Surr: 1-Chlorooctadecane | 62.6 | 50 - 150 | | %Rec | 1 | 6/2/2022 2:14:28 PM |
| Surr: o-Terphenyl | 103 | 50 - 150 | | %Rec | 1 | 6/3/2022 8:02:09 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.64 | | mg/Kg-dry | 1 | 5/17/2022 2:21:28 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.58 | | mg/Kg-dry | 1 | 5/17/2022 2:21:28 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.64 | | mg/Kg-dry | 1 | 5/17/2022 2:21:28 AM |
| Aliphatic Hydrocarbon (C10-C12) | 1.02 | 0.528 | | mg/Kg-dry | 1 | 5/17/2022 2:21:28 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.17 | | mg/Kg-dry | 1 | 5/17/2022 2:21:28 AM |
| Aromatic Hydrocarbon (C10-C12) | 7.26 | 0.528 | | mg/Kg-dry | 1 | 5/17/2022 2:21:28 AM |
| Aromatic Hydrocarbon (C12-C13) | 67.4 | 0.528 | Q | mg/Kg-dry | 1 | 5/17/2022 2:21:28 AM |
| Surr: 1,4-Difluorobenzene | 84.3 | 60 - 140 | | %Rec | 1 | 5/17/2022 2:21:28 AM |
| Surr: Bromofluorobenzene | 80.0 | 60 - 140 | | %Rec | 1 | 5/17/2022 2:21:28 AM |

**NOTES:**
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 35.9 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-014
**Client Sample ID:** **TP-43-S4-14**

**Collection Date:** 5/3/2022 10:50:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | 66.6 | 26.1 | | mg/Kg-dry | 1 | 6/2/2022 2:38:19 PM |
| Aliphatic Hydrocarbon (C10-C12) | 156 | 13.0 | B | mg/Kg-dry | 1 | 6/2/2022 2:38:19 PM |
| Aliphatic Hydrocarbon (C12-C16) | 120 | 13.0 | | mg/Kg-dry | 1 | 6/2/2022 2:38:19 PM |
| Aliphatic Hydrocarbon (C16-C21) | 90.8 | 13.0 | | mg/Kg-dry | 1 | 6/2/2022 2:38:19 PM |
| Aliphatic Hydrocarbon (C21-C34) | 1,540 | 13.0 | | mg/Kg-dry | 1 | 6/2/2022 2:38:19 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 26.1 | | mg/Kg-dry | 1 | 6/3/2022 8:25:50 AM |
| Aromatic Hydrocarbon (C10-C12) | 13.3 | 13.0 | | mg/Kg-dry | 1 | 6/3/2022 8:25:50 AM |
| Aromatic Hydrocarbon (C12-C16) | 63.2 | 13.0 | | mg/Kg-dry | 1 | 6/3/2022 8:25:50 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 13.0 | | mg/Kg-dry | 1 | 6/3/2022 8:25:50 AM |
| Aromatic Hydrocarbon (C21-C34) | 240 | 13.0 | | mg/Kg-dry | 1 | 6/3/2022 8:25:50 AM |
| Surr: 1-Chlorooctadecane | 66.5 | 50 - 150 | | %Rec | 1 | 6/2/2022 2:38:19 PM |
| Surr: o-Terphenyl | 114 | 50 - 150 | | %Rec | 1 | 6/3/2022 8:25:50 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 1.54 | | mg/Kg-dry | 1 | 5/17/2022 3:02:59 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 0.923 | | mg/Kg-dry | 1 | 5/17/2022 3:02:59 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 1.54 | | mg/Kg-dry | 1 | 5/17/2022 3:02:59 AM |
| Aliphatic Hydrocarbon (C10-C12) | 3.21 | 0.308 | | mg/Kg-dry | 1 | 5/17/2022 3:02:59 AM |
| Aromatic Hydrocarbon (C8-C10) | 3.67 | 1.85 | | mg/Kg-dry | 1 | 5/17/2022 3:02:59 AM |
| Aromatic Hydrocarbon (C10-C12) | 20.2 | 0.308 | | mg/Kg-dry | 1 | 5/17/2022 3:02:59 AM |
| Aromatic Hydrocarbon (C12-C13) | 40.9 | 0.308 | Q | mg/Kg-dry | 1 | 5/17/2022 3:02:59 AM |
| Surr: 1,4-Difluorobenzene | 84.5 | 60 - 140 | | %Rec | 1 | 5/17/2022 3:02:59 AM |
| Surr: Bromofluorobenzene | 98.5 | 60 - 140 | | %Rec | 1 | 5/17/2022 3:02:59 AM |

**NOTES:**
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 26.0 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-015
**Client Sample ID:** **TP-44-S1-5**

**Collection Date:** 5/3/2022 4:25:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | 250 | 23.2 | | mg/Kg-dry | 1 | 6/2/2022 6:12:37 PM |
| Aliphatic Hydrocarbon (C10-C12) | 103 | 11.6 | B | mg/Kg-dry | 1 | 6/2/2022 6:12:37 PM |
| Aliphatic Hydrocarbon (C12-C16) | 76.8 | 11.6 | | mg/Kg-dry | 1 | 6/2/2022 6:12:37 PM |
| Aliphatic Hydrocarbon (C16-C21) | 166 | 11.6 | | mg/Kg-dry | 1 | 6/2/2022 6:12:37 PM |
| Aliphatic Hydrocarbon (C21-C34) | 3,820 | 116 | D | mg/Kg-dry | 10 | 6/3/2022 3:12:48 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 23.2 | | mg/Kg-dry | 1 | 6/3/2022 8:49:27 AM |
| Aromatic Hydrocarbon (C10-C12) | 12.6 | 11.6 | | mg/Kg-dry | 1 | 6/3/2022 8:49:27 AM |
| Aromatic Hydrocarbon (C12-C16) | 36.7 | 11.6 | | mg/Kg-dry | 1 | 6/3/2022 8:49:27 AM |
| Aromatic Hydrocarbon (C16-C21) | 127 | 11.6 | | mg/Kg-dry | 1 | 6/3/2022 8:49:27 AM |
| Aromatic Hydrocarbon (C21-C34) | 534 | 11.6 | | mg/Kg-dry | 1 | 6/3/2022 8:49:27 AM |
| Surr: 1-Chlorooctadecane | 68.8 | 50 - 150 | | %Rec | 1 | 6/2/2022 6:12:37 PM |
| Surr: o-Terphenyl | 104 | 50 - 150 | | %Rec | 1 | 6/3/2022 8:49:27 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 1.68 | | mg/Kg-dry | 1 | 5/17/2022 3:44:18 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.01 | | mg/Kg-dry | 1 | 5/17/2022 3:44:18 AM |
| Aliphatic Hydrocarbon (C8-C10) | 6.00 | 1.68 | | mg/Kg-dry | 1 | 5/17/2022 3:44:18 AM |
| Aliphatic Hydrocarbon (C10-C12) | 13.2 | 0.335 | | mg/Kg-dry | 1 | 5/17/2022 3:44:18 AM |
| Aromatic Hydrocarbon (C8-C10) | 20.8 | 2.01 | | mg/Kg-dry | 1 | 5/17/2022 3:44:18 AM |
| Aromatic Hydrocarbon (C10-C12) | 58.7 | 0.335 | | mg/Kg-dry | 1 | 5/17/2022 3:44:18 AM |
| Aromatic Hydrocarbon (C12-C13) | 76.8 | 0.335 | Q | mg/Kg-dry | 1 | 5/17/2022 3:44:18 AM |
| Surr: 1,4-Difluorobenzene | 88.8 | 60 - 140 | | %Rec | 1 | 5/17/2022 3:44:18 AM |
| Surr: Bromofluorobenzene | 133 | 60 - 140 | | %Rec | 1 | 5/17/2022 3:44:18 AM |

**NOTES:**
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 22.8 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-016
**Client Sample ID:** **TP-44-S2-10**

**Collection Date:** 5/3/2022 4:50:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | 308 | 22.9 | | mg/Kg-dry | 1 | 6/2/2022 7:00:07 PM |
| Aliphatic Hydrocarbon (C10-C12) | 129 | 11.4 | B | mg/Kg-dry | 1 | 6/2/2022 7:00:07 PM |
| Aliphatic Hydrocarbon (C12-C16) | 74.5 | 11.4 | | mg/Kg-dry | 1 | 6/2/2022 7:00:07 PM |
| Aliphatic Hydrocarbon (C16-C21) | 127 | 11.4 | | mg/Kg-dry | 1 | 6/2/2022 7:00:07 PM |
| Aliphatic Hydrocarbon (C21-C34) | 3,090 | 114 | D | mg/Kg-dry | 10 | 6/3/2022 3:37:43 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 22.9 | | mg/Kg-dry | 1 | 6/3/2022 9:13:02 AM |
| Aromatic Hydrocarbon (C10-C12) | 22.8 | 11.4 | | mg/Kg-dry | 1 | 6/3/2022 9:13:02 AM |
| Aromatic Hydrocarbon (C12-C16) | 45.0 | 11.4 | | mg/Kg-dry | 1 | 6/3/2022 9:13:02 AM |
| Aromatic Hydrocarbon (C16-C21) | 24.6 | 11.4 | | mg/Kg-dry | 1 | 6/3/2022 9:13:02 AM |
| Aromatic Hydrocarbon (C21-C34) | 472 | 11.4 | | mg/Kg-dry | 1 | 6/3/2022 9:13:02 AM |
| Surr: 1-Chlorooctadecane | 63.8 | 50 - 150 | | %Rec | 1 | 6/2/2022 7:00:07 PM |
| Surr: o-Terphenyl | 114 | 50 - 150 | | %Rec | 1 | 6/3/2022 9:13:02 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.36 | | mg/Kg-dry | 1 | 5/17/2022 4:25:45 AM |
| Aliphatic Hydrocarbon (C6-C8) | 6.17 | 1.42 | | mg/Kg-dry | 1 | 5/17/2022 4:25:45 AM |
| Aliphatic Hydrocarbon (C8-C10) | 20.4 | 2.36 | | mg/Kg-dry | 1 | 5/17/2022 4:25:45 AM |
| Aliphatic Hydrocarbon (C10-C12) | 27.8 | 0.473 | | mg/Kg-dry | 1 | 5/17/2022 4:25:45 AM |
| Aromatic Hydrocarbon (C8-C10) | 49.9 | 2.84 | | mg/Kg-dry | 1 | 5/17/2022 4:25:45 AM |
| Aromatic Hydrocarbon (C10-C12) | 169 | 0.473 | | mg/Kg-dry | 1 | 5/17/2022 4:25:45 AM |
| Aromatic Hydrocarbon (C12-C13) | 189 | 0.473 | Q | mg/Kg-dry | 1 | 5/17/2022 4:25:45 AM |
| Surr: 1,4-Difluorobenzene | 93.3 | 60 - 140 | | %Rec | 1 | 5/17/2022 4:25:45 AM |
| Surr: Bromofluorobenzene | 138 | 60 - 140 | | %Rec | 1 | 5/17/2022 4:25:45 AM |

**NOTES:**
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 21.0 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-017
**Client Sample ID:** **TP-47-S1-5**

**Collection Date:** 5/3/2022 12:50:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 31.4 | | mg/Kg-dry | 1 | 6/2/2022 7:47:45 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 15.7 | | mg/Kg-dry | 1 | 6/2/2022 7:47:45 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 15.7 | | mg/Kg-dry | 1 | 6/2/2022 7:47:45 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 15.7 | | mg/Kg-dry | 1 | 6/2/2022 7:47:45 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 15.7 | | mg/Kg-dry | 1 | 6/2/2022 7:47:45 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 31.4 | | mg/Kg-dry | 1 | 6/3/2022 9:36:45 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 15.7 | | mg/Kg-dry | 1 | 6/3/2022 9:36:45 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 15.7 | | mg/Kg-dry | 1 | 6/3/2022 9:36:45 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 15.7 | | mg/Kg-dry | 1 | 6/3/2022 9:36:45 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 15.7 | | mg/Kg-dry | 1 | 6/3/2022 9:36:45 AM |
| Surr: 1-Chlorooctadecane | 64.4 | 50 - 150 | | %Rec | 1 | 6/2/2022 7:47:45 PM |
| Surr: o-Terphenyl | 102 | 50 - 150 | | %Rec | 1 | 6/3/2022 9:36:45 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.70 | | mg/Kg-dry | 1 | 5/17/2022 5:07:17 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.62 | | mg/Kg-dry | 1 | 5/17/2022 5:07:17 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.70 | | mg/Kg-dry | 1 | 5/17/2022 5:07:17 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.539 | | mg/Kg-dry | 1 | 5/17/2022 5:07:17 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.24 | | mg/Kg-dry | 1 | 5/17/2022 5:07:17 AM |
| Aromatic Hydrocarbon (C10-C12) | 5.90 | 0.539 | | mg/Kg-dry | 1 | 5/17/2022 5:07:17 AM |
| Aromatic Hydrocarbon (C12-C13) | 48.4 | 0.539 | Q | mg/Kg-dry | 1 | 5/17/2022 5:07:17 AM |
| Surr: 1,4-Difluorobenzene | 85.6 | 60 - 140 | | %Rec | 1 | 5/17/2022 5:07:17 AM |
| Surr: Bromofluorobenzene | 80.2 | 60 - 140 | | %Rec | 1 | 5/17/2022 5:07:17 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 38.0 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

**NOTES:**
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-018
**Client Sample ID:** **TP-48-S1-5**

**Collection Date:** 5/3/2022 2:30:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | 790 | 27.1 | | mg/Kg-dry | 1 | 6/2/2022 8:35:27 PM |
| Aliphatic Hydrocarbon (C10-C12) | 584 | 13.5 | B | mg/Kg-dry | 1 | 6/2/2022 8:35:27 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 13.5 | | mg/Kg-dry | 1 | 6/2/2022 8:35:27 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.5 | | mg/Kg-dry | 1 | 6/2/2022 8:35:27 PM |
| Aliphatic Hydrocarbon (C21-C34) | 86.1 | 13.5 | | mg/Kg-dry | 1 | 6/2/2022 8:35:27 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 27.1 | | mg/Kg-dry | 1 | 6/3/2022 10:14:12 AM |
| Aromatic Hydrocarbon (C10-C12) | 18.1 | 13.5 | | mg/Kg-dry | 1 | 6/3/2022 10:14:12 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.5 | | mg/Kg-dry | 1 | 6/3/2022 10:14:12 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 13.5 | | mg/Kg-dry | 1 | 6/3/2022 10:14:12 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.5 | | mg/Kg-dry | 1 | 6/3/2022 10:14:12 AM |
| Surr: 1-Chlorooctadecane | 59.8 | 50 - 150 | | %Rec | 1 | 6/2/2022 8:35:27 PM |
| Surr: o-Terphenyl | 96.7 | 50 - 150 | | %Rec | 1 | 6/3/2022 10:14:12 AM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.21 | | mg/Kg-dry | 1 | 5/17/2022 9:15:30 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.93 | | mg/Kg-dry | 1 | 5/17/2022 9:15:30 AM |
| Aliphatic Hydrocarbon (C8-C10) | 126 | 3.21 | | mg/Kg-dry | 1 | 5/17/2022 9:15:30 AM |
| Aliphatic Hydrocarbon (C10-C12) | 286 | 0.643 | | mg/Kg-dry | 1 | 5/17/2022 9:15:30 AM |
| Aromatic Hydrocarbon (C8-C10) | 212 | 3.86 | Q | mg/Kg-dry | 1 | 5/17/2022 9:15:30 AM |
| Aromatic Hydrocarbon (C10-C12) | 815 | 0.643 | | mg/Kg-dry | 1 | 5/17/2022 9:15:30 AM |
| Aromatic Hydrocarbon (C12-C13) | 31.4 | 0.643 | | mg/Kg-dry | 1 | 5/17/2022 9:15:30 AM |
| Surr: 1,4-Difluorobenzene | 93.7 | 60 - 140 | | %Rec | 1 | 5/17/2022 9:15:30 AM |
| Surr: Bromofluorobenzene | 453 | 60 - 140 | S | %Rec | 1 | 5/17/2022 9:15:30 AM |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 35.6 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-019
**Client Sample ID:** **TP-48-S2-10**

**Collection Date:** 5/3/2022 2:50:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36430 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | 285 | 26.1 | | mg/Kg-dry | 1 | 6/2/2022 9:22:56 PM |
| Aliphatic Hydrocarbon (C10-C12) | 164 | 13.1 | B | mg/Kg-dry | 1 | 6/2/2022 9:22:56 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 13.1 | | mg/Kg-dry | 1 | 6/2/2022 9:22:56 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.1 | | mg/Kg-dry | 1 | 6/2/2022 9:22:56 PM |
| Aliphatic Hydrocarbon (C21-C34) | 118 | 13.1 | | mg/Kg-dry | 1 | 6/2/2022 9:22:56 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 26.1 | | mg/Kg-dry | 1 | 6/3/2022 4:25:29 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.1 | | mg/Kg-dry | 1 | 6/3/2022 4:25:29 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.1 | | mg/Kg-dry | 1 | 6/3/2022 4:25:29 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 13.1 | | mg/Kg-dry | 1 | 6/3/2022 4:25:29 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.1 | | mg/Kg-dry | 1 | 6/3/2022 4:25:29 PM |
| Surr: 1-Chlorooctadecane | 58.5 | 50 - 150 | | %Rec | 1 | 6/2/2022 9:22:56 PM |
| Surr: o-Terphenyl | 99.0 | 50 - 150 | | %Rec | 1 | 6/3/2022 4:25:29 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.70 | | mg/Kg-dry | 1 | 5/17/2022 9:56:57 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.62 | | mg/Kg-dry | 1 | 5/17/2022 9:56:57 AM |
| Aliphatic Hydrocarbon (C8-C10) | 118 | 2.70 | | mg/Kg-dry | 1 | 5/17/2022 9:56:57 AM |
| Aliphatic Hydrocarbon (C10-C12) | 182 | 0.540 | | mg/Kg-dry | 1 | 5/17/2022 9:56:57 AM |
| Aromatic Hydrocarbon (C8-C10) | 171 | 3.24 | Q | mg/Kg-dry | 1 | 5/17/2022 9:56:57 AM |
| Aromatic Hydrocarbon (C10-C12) | 454 | 0.540 | | mg/Kg-dry | 1 | 5/17/2022 9:56:57 AM |
| Aromatic Hydrocarbon (C12-C13) | 43.0 | 0.540 | | mg/Kg-dry | 1 | 5/17/2022 9:56:57 AM |
| Surr: 1,4-Difluorobenzene | 94.2 | 60 - 140 | | %Rec | 1 | 5/17/2022 9:56:57 AM |
| Surr: Bromofluorobenzene | 742 | 60 - 140 | S | %Rec | 1 | 5/17/2022 9:56:57 AM |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75390 | | Analyst: me |
| Percent Moisture | 32.7 | 0.500 | | wt% | 1 | 5/13/2022 11:07:13 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-020
**Client Sample ID:** **TP-49-S1-2.5**

**Collection Date:** 5/3/2022 4:25:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 23.9 | | mg/Kg-dry | 1 | 6/2/2022 11:45:26 PM |
| Aliphatic Hydrocarbon (C10-C12) | 93.9 | 11.9 | | mg/Kg-dry | 1 | 6/2/2022 11:45:26 PM |
| Aliphatic Hydrocarbon (C12-C16) | 63.2 | 11.9 | | mg/Kg-dry | 1 | 6/2/2022 11:45:26 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 11.9 | | mg/Kg-dry | 1 | 6/2/2022 11:45:26 PM |
| Aliphatic Hydrocarbon (C21-C34) | 27.8 | 11.9 | | mg/Kg-dry | 1 | 6/2/2022 11:45:26 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 23.9 | | mg/Kg-dry | 1 | 6/3/2022 6:00:03 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 11.9 | | mg/Kg-dry | 1 | 6/3/2022 6:00:03 PM |
| Aromatic Hydrocarbon (C12-C16) | 17.0 | 11.9 | | mg/Kg-dry | 1 | 6/3/2022 6:00:03 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 11.9 | | mg/Kg-dry | 1 | 6/3/2022 6:00:03 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 11.9 | | mg/Kg-dry | 1 | 6/3/2022 6:00:03 PM |
| Surr: 1-Chlorooctadecane | 72.3 | 50 - 150 | | %Rec | 1 | 6/2/2022 11:45:26 PM |
| Surr: o-Terphenyl | 113 | 50 - 150 | | %Rec | 1 | 6/3/2022 6:00:03 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.03 | | mg/Kg-dry | 1 | 5/17/2022 10:38:24 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.82 | | mg/Kg-dry | 1 | 5/17/2022 10:38:24 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 3.03 | | mg/Kg-dry | 1 | 5/17/2022 10:38:24 AM |
| Aliphatic Hydrocarbon (C10-C12) | 5.06 | 0.606 | | mg/Kg-dry | 1 | 5/17/2022 10:38:24 AM |
| Aromatic Hydrocarbon (C8-C10) | 6.89 | 3.64 | Q | mg/Kg-dry | 1 | 5/17/2022 10:38:24 AM |
| Aromatic Hydrocarbon (C10-C12) | 41.6 | 0.606 | | mg/Kg-dry | 1 | 5/17/2022 10:38:24 AM |
| Aromatic Hydrocarbon (C12-C13) | 15.4 | 0.606 | | mg/Kg-dry | 1 | 5/17/2022 10:38:24 AM |
| Surr: 1,4-Difluorobenzene | 90.6 | 60 - 140 | | %Rec | 1 | 5/17/2022 10:38:24 AM |
| Surr: Bromofluorobenzene | 92.4 | 60 - 140 | | %Rec | 1 | 5/17/2022 10:38:24 AM |

**NOTES:**
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 23.9 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-021
**Client Sample ID:** **TP-49-S2-5**

**Collection Date:** 5/3/2022 4:45:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 25.8 | | mg/Kg-dry | 1 | 6/3/2022 2:07:34 AM |
| Aliphatic Hydrocarbon (C10-C12) | 32.1 | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 2:07:34 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 2:07:34 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 2:07:34 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 2:07:34 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 25.8 | | mg/Kg-dry | 1 | 6/3/2022 7:10:53 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 7:10:53 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 7:10:53 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 7:10:53 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 7:10:53 PM |
| Surr: 1-Chlorooctadecane | 79.0 | 50 - 150 | | %Rec | 1 | 6/3/2022 2:07:34 AM |
| Surr: o-Terphenyl | 112 | 50 - 150 | | %Rec | 1 | 6/3/2022 7:10:53 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | 6.51 | 3.60 | Q | mg/Kg-dry | 1 | 5/17/2022 11:19:56 AM |
| Aliphatic Hydrocarbon (C6-C8) | 42.5 | 2.16 | | mg/Kg-dry | 1 | 5/17/2022 11:19:56 AM |
| Aliphatic Hydrocarbon (C8-C10) | 35.1 | 3.60 | | mg/Kg-dry | 1 | 5/17/2022 11:19:56 AM |
| Aliphatic Hydrocarbon (C10-C12) | 92.4 | 0.721 | | mg/Kg-dry | 1 | 5/17/2022 11:19:56 AM |
| Aromatic Hydrocarbon (C8-C10) | 76.1 | 4.32 | Q | mg/Kg-dry | 1 | 5/17/2022 11:19:56 AM |
| Aromatic Hydrocarbon (C10-C12) | 524 | 0.721 | | mg/Kg-dry | 1 | 5/17/2022 11:19:56 AM |
| Aromatic Hydrocarbon (C12-C13) | 783 | 0.721 | | mg/Kg-dry | 1 | 5/17/2022 11:19:56 AM |
| Surr: 1,4-Difluorobenzene | 120 | 60 - 140 | | %Rec | 1 | 5/17/2022 11:19:56 AM |
| Surr: Bromofluorobenzene | 202 | 60 - 140 | S | %Rec | 1 | 5/17/2022 11:19:56 AM |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 31.0 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-022
**Client Sample ID:** **TP-49-S3-7.5**

**Collection Date:** 5/3/2022 5:00:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 25.9 | | mg/Kg-dry | 1 | 6/4/2022 1:26:14 AM |
| Aliphatic Hydrocarbon (C10-C12) | 160 | 12.9 | | mg/Kg-dry | 1 | 6/4/2022 1:26:14 AM |
| Aliphatic Hydrocarbon (C12-C16) | 46.0 | 12.9 | | mg/Kg-dry | 1 | 6/4/2022 1:26:14 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 12.9 | | mg/Kg-dry | 1 | 6/4/2022 1:26:14 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 12.9 | | mg/Kg-dry | 1 | 6/4/2022 1:26:14 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 25.9 | | mg/Kg-dry | 1 | 6/3/2022 7:34:22 PM |
| Aromatic Hydrocarbon (C10-C12) | 36.8 | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 7:34:22 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 7:34:22 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 7:34:22 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 12.9 | | mg/Kg-dry | 1 | 6/3/2022 7:34:22 PM |
| Surr: 1-Chlorooctadecane | 63.5 | 50 - 150 | | %Rec | 1 | 6/4/2022 1:26:14 AM |
| Surr: o-Terphenyl | 97.7 | 50 - 150 | | %Rec | 1 | 6/3/2022 7:34:22 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | 14.4 | 3.33 | Q | mg/Kg-dry | 1 | 5/17/2022 12:01:29 PM |
| Aliphatic Hydrocarbon (C6-C8) | 160 | 2.00 | | mg/Kg-dry | 1 | 5/17/2022 12:01:29 PM |
| Aliphatic Hydrocarbon (C8-C10) | 191 | 3.33 | | mg/Kg-dry | 1 | 5/17/2022 12:01:29 PM |
| Aliphatic Hydrocarbon (C10-C12) | 282 | 0.666 | | mg/Kg-dry | 1 | 5/17/2022 12:01:29 PM |
| Aromatic Hydrocarbon (C8-C10) | 291 | 4.00 | Q | mg/Kg-dry | 1 | 5/17/2022 12:01:29 PM |
| Aromatic Hydrocarbon (C10-C12) | 1,430 | 0.666 | | mg/Kg-dry | 1 | 5/17/2022 12:01:29 PM |
| Aromatic Hydrocarbon (C12-C13) | 1,240 | 0.666 | | mg/Kg-dry | 1 | 5/17/2022 12:01:29 PM |
| Surr: 1,4-Difluorobenzene | 186 | 60 - 140 | S | %Rec | 1 | 5/17/2022 12:01:29 PM |
| Surr: Bromofluorobenzene | 838 | 60 - 140 | S | %Rec | 1 | 5/17/2022 12:01:29 PM |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 33.9 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-023
**Client Sample ID:** **TP-49-S4-10**

**Collection Date:** 5/3/2022 5:10:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 25.2 | | mg/Kg-dry | 1 | 6/4/2022 1:49:46 AM |
| Aliphatic Hydrocarbon (C10-C12) | 175 | 12.6 | | mg/Kg-dry | 1 | 6/4/2022 1:49:46 AM |
| Aliphatic Hydrocarbon (C12-C16) | 63.6 | 12.6 | | mg/Kg-dry | 1 | 6/4/2022 1:49:46 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 12.6 | | mg/Kg-dry | 1 | 6/4/2022 1:49:46 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 12.6 | | mg/Kg-dry | 1 | 6/4/2022 1:49:46 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 25.2 | | mg/Kg-dry | 1 | 6/3/2022 7:57:59 PM |
| Aromatic Hydrocarbon (C10-C12) | 50.1 | 12.6 | | mg/Kg-dry | 1 | 6/3/2022 7:57:59 PM |
| Aromatic Hydrocarbon (C12-C16) | 31.8 | 12.6 | | mg/Kg-dry | 1 | 6/3/2022 7:57:59 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 12.6 | | mg/Kg-dry | 1 | 6/3/2022 7:57:59 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 12.6 | | mg/Kg-dry | 1 | 6/3/2022 7:57:59 PM |
| Surr: 1-Chlorooctadecane | 80.7 | 50 - 150 | | %Rec | 1 | 6/4/2022 1:49:46 AM |
| Surr: o-Terphenyl | 122 | 50 - 150 | | %Rec | 1 | 6/3/2022 7:57:59 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | 41.3 | 2.94 | Q | mg/Kg-dry | 1 | 5/17/2022 12:43:04 PM |
| Aliphatic Hydrocarbon (C6-C8) | 166 | 1.77 | | mg/Kg-dry | 1 | 5/17/2022 12:43:04 PM |
| Aliphatic Hydrocarbon (C8-C10) | 156 | 2.94 | | mg/Kg-dry | 1 | 5/17/2022 12:43:04 PM |
| Aliphatic Hydrocarbon (C10-C12) | 200 | 0.589 | | mg/Kg-dry | 1 | 5/17/2022 12:43:04 PM |
| Aromatic Hydrocarbon (C8-C10) | 241 | 3.53 | Q | mg/Kg-dry | 1 | 5/17/2022 12:43:04 PM |
| Aromatic Hydrocarbon (C10-C12) | 1,020 | 0.589 | | mg/Kg-dry | 1 | 5/17/2022 12:43:04 PM |
| Aromatic Hydrocarbon (C12-C13) | 955 | 0.589 | | mg/Kg-dry | 1 | 5/17/2022 12:43:04 PM |
| Surr: 1,4-Difluorobenzene | 213 | 60 - 140 | S | %Rec | 1 | 5/17/2022 12:43:04 PM |
| Surr: Bromofluorobenzene | 691 | 60 - 140 | S | %Rec | 1 | 5/17/2022 12:43:04 PM |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 28.7 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-024
**Client Sample ID:** **TP-49-S5-18**

**Collection Date:** 5/3/2022 6:00:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 21.1 | | mg/Kg-dry | 1 | 6/4/2022 2:13:17 AM |
| Aliphatic Hydrocarbon (C10-C12) | 12.1 | 10.5 | | mg/Kg-dry | 1 | 6/4/2022 2:13:17 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.5 | | mg/Kg-dry | 1 | 6/4/2022 2:13:17 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.5 | | mg/Kg-dry | 1 | 6/4/2022 2:13:17 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.5 | | mg/Kg-dry | 1 | 6/4/2022 2:13:17 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 21.1 | | mg/Kg-dry | 1 | 6/3/2022 8:21:28 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.5 | | mg/Kg-dry | 1 | 6/3/2022 8:21:28 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.5 | | mg/Kg-dry | 1 | 6/3/2022 8:21:28 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 10.5 | | mg/Kg-dry | 1 | 6/3/2022 8:21:28 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.5 | | mg/Kg-dry | 1 | 6/3/2022 8:21:28 PM |
| Surr: 1-Chlorooctadecane | 82.5 | 50 - 150 | | %Rec | 1 | 6/4/2022 2:13:17 AM |
| Surr: o-Terphenyl | 123 | 50 - 150 | | %Rec | 1 | 6/3/2022 8:21:28 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36461 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | 30.8 | 1.97 | Q | mg/Kg-dry | 1 | 5/17/2022 1:24:29 PM |
| Aliphatic Hydrocarbon (C6-C8) | 109 | 1.18 | | mg/Kg-dry | 1 | 5/17/2022 1:24:29 PM |
| Aliphatic Hydrocarbon (C8-C10) | 86.2 | 1.97 | | mg/Kg-dry | 1 | 5/17/2022 1:24:29 PM |
| Aliphatic Hydrocarbon (C10-C12) | 93.8 | 0.395 | | mg/Kg-dry | 1 | 5/17/2022 1:24:29 PM |
| Aromatic Hydrocarbon (C8-C10) | 137 | 2.37 | Q | mg/Kg-dry | 1 | 5/17/2022 1:24:29 PM |
| Aromatic Hydrocarbon (C10-C12) | 506 | 0.395 | | mg/Kg-dry | 1 | 5/17/2022 1:24:29 PM |
| Aromatic Hydrocarbon (C12-C13) | 576 | 0.395 | | mg/Kg-dry | 1 | 5/17/2022 1:24:29 PM |
| Surr: 1,4-Difluorobenzene | 221 | 60 - 140 | S | %Rec | 1 | 5/17/2022 1:24:29 PM |
| Surr: Bromofluorobenzene | 595 | 60 - 140 | S | %Rec | 1 | 5/17/2022 1:24:29 PM |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 18.9 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-025
**Client Sample ID:** **TP-55-S1-2.5**

**Collection Date:** 5/4/2022 7:40:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 23.0 | | mg/Kg-dry | 1 | 6/4/2022 2:36:39 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 11.5 | | mg/Kg-dry | 1 | 6/4/2022 2:36:39 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 11.5 | | mg/Kg-dry | 1 | 6/4/2022 2:36:39 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 11.5 | | mg/Kg-dry | 1 | 6/4/2022 2:36:39 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 11.5 | | mg/Kg-dry | 1 | 6/4/2022 2:36:39 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 23.0 | | mg/Kg-dry | 1 | 6/3/2022 8:44:54 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 11.5 | | mg/Kg-dry | 1 | 6/3/2022 8:44:54 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 11.5 | | mg/Kg-dry | 1 | 6/3/2022 8:44:54 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 11.5 | | mg/Kg-dry | 1 | 6/3/2022 8:44:54 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 11.5 | | mg/Kg-dry | 1 | 6/3/2022 8:44:54 PM |
| Surr: 1-Chlorooctadecane | 68.9 | 50 - 150 | | %Rec | 1 | 6/4/2022 2:36:39 AM |
| Surr: o-Terphenyl | 106 | 50 - 150 | | %Rec | 1 | 6/3/2022 8:44:54 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.79 | H | mg/Kg-dry | 1 | 5/27/2022 12:39:25 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.67 | H | mg/Kg-dry | 1 | 5/27/2022 12:39:25 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.79 | H | mg/Kg-dry | 1 | 5/27/2022 12:39:25 AM |
| Aliphatic Hydrocarbon (C10-C12) | 3.37 | 0.558 | H | mg/Kg-dry | 1 | 5/27/2022 12:39:25 AM |
| Aromatic Hydrocarbon (C8-C10) | 5.25 | 3.35 | H | mg/Kg-dry | 1 | 5/27/2022 12:39:25 AM |
| Aromatic Hydrocarbon (C10-C12) | 5.46 | 0.558 | H | mg/Kg-dry | 1 | 5/27/2022 12:39:25 AM |
| Aromatic Hydrocarbon (C12-C13) | 2.76 | 0.558 | H | mg/Kg-dry | 1 | 5/27/2022 12:39:25 AM |
| Surr: 1,4-Difluorobenzene | 89.8 | 60 - 140 | H | %Rec | 1 | 5/27/2022 12:39:25 AM |
| Surr: Bromofluorobenzene | 95.2 | 60 - 140 | H | %Rec | 1 | 5/27/2022 12:39:25 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 25.6 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-026
**Client Sample ID:** **TP-55-S2-5**

**Collection Date:** 5/4/2022 8:00:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 27.0 | | mg/Kg-dry | 1 | 6/4/2022 3:00:09 AM |
| Aliphatic Hydrocarbon (C10-C12) | 23.3 | 13.5 | | mg/Kg-dry | 1 | 6/4/2022 3:00:09 AM |
| Aliphatic Hydrocarbon (C12-C16) | 152 | 13.5 | | mg/Kg-dry | 1 | 6/4/2022 3:00:09 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.5 | | mg/Kg-dry | 1 | 6/4/2022 3:00:09 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 13.5 | | mg/Kg-dry | 1 | 6/4/2022 3:00:09 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 27.0 | | mg/Kg-dry | 1 | 6/3/2022 9:08:27 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.5 | | mg/Kg-dry | 1 | 6/3/2022 9:08:27 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.5 | | mg/Kg-dry | 1 | 6/3/2022 9:08:27 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 13.5 | | mg/Kg-dry | 1 | 6/3/2022 9:08:27 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.5 | | mg/Kg-dry | 1 | 6/3/2022 9:08:27 PM |
| Surr: 1-Chlorooctadecane | 86.7 | 50 - 150 | | %Rec | 1 | 6/4/2022 3:00:09 AM |
| Surr: o-Terphenyl | 121 | 50 - 150 | | %Rec | 1 | 6/3/2022 9:08:27 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.92 | H | mg/Kg-dry | 1 | 5/27/2022 1:20:07 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.75 | H | mg/Kg-dry | 1 | 5/27/2022 1:20:07 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.92 | H | mg/Kg-dry | 1 | 5/27/2022 1:20:07 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.584 | H | mg/Kg-dry | 1 | 5/27/2022 1:20:07 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.50 | H | mg/Kg-dry | 1 | 5/27/2022 1:20:07 AM |
| Aromatic Hydrocarbon (C10-C12) | 0.941 | 0.584 | H | mg/Kg-dry | 1 | 5/27/2022 1:20:07 AM |
| Aromatic Hydrocarbon (C12-C13) | 3.00 | 0.584 | H | mg/Kg-dry | 1 | 5/27/2022 1:20:07 AM |
| Surr: 1,4-Difluorobenzene | 87.7 | 60 - 140 | H | %Rec | 1 | 5/27/2022 1:20:07 AM |
| Surr: Bromofluorobenzene | 84.8 | 60 - 140 | H | %Rec | 1 | 5/27/2022 1:20:07 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 34.4 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-027
**Client Sample ID:** **TP-55-S3-10**

**Collection Date:** 5/4/2022 8:25:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 20.5 | | mg/Kg-dry | 1 | 6/4/2022 3:23:31 AM |
| Aliphatic Hydrocarbon (C10-C12) | 15.9 | 10.3 | | mg/Kg-dry | 1 | 6/4/2022 3:23:31 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.3 | | mg/Kg-dry | 1 | 6/4/2022 3:23:31 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.3 | | mg/Kg-dry | 1 | 6/4/2022 3:23:31 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.3 | | mg/Kg-dry | 1 | 6/4/2022 3:23:31 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 20.5 | | mg/Kg-dry | 1 | 6/3/2022 9:31:53 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.3 | | mg/Kg-dry | 1 | 6/3/2022 9:31:53 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.3 | | mg/Kg-dry | 1 | 6/3/2022 9:31:53 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 10.3 | | mg/Kg-dry | 1 | 6/3/2022 9:31:53 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.3 | | mg/Kg-dry | 1 | 6/3/2022 9:31:53 PM |
| Surr: 1-Chlorooctadecane | 70.9 | 50 - 150 | | %Rec | 1 | 6/4/2022 3:23:31 AM |
| Surr: o-Terphenyl | 107 | 50 - 150 | | %Rec | 1 | 6/3/2022 9:31:53 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.07 | H | mg/Kg-dry | 1 | 5/27/2022 2:41:33 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.24 | H | mg/Kg-dry | 1 | 5/27/2022 2:41:33 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.07 | H | mg/Kg-dry | 1 | 5/27/2022 2:41:33 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.414 | H | mg/Kg-dry | 1 | 5/27/2022 2:41:33 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 2.48 | H | mg/Kg-dry | 1 | 5/27/2022 2:41:33 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 0.414 | H | mg/Kg-dry | 1 | 5/27/2022 2:41:33 AM |
| Aromatic Hydrocarbon (C12-C13) | 0.617 | 0.414 | H | mg/Kg-dry | 1 | 5/27/2022 2:41:33 AM |
| Surr: 1,4-Difluorobenzene | 88.3 | 60 - 140 | H | %Rec | 1 | 5/27/2022 2:41:33 AM |
| Surr: Bromofluorobenzene | 85.1 | 60 - 140 | H | %Rec | 1 | 5/27/2022 2:41:33 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 15.1 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-028
**Client Sample ID:** **TP-55-S4-15**

**Collection Date:** 5/4/2022 8:50:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 22.5 | | mg/Kg-dry | 1 | 6/4/2022 3:46:54 AM |
| Aliphatic Hydrocarbon (C10-C12) | 17.8 | 11.3 | | mg/Kg-dry | 1 | 6/4/2022 3:46:54 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 11.3 | | mg/Kg-dry | 1 | 6/4/2022 3:46:54 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 11.3 | | mg/Kg-dry | 1 | 6/4/2022 3:46:54 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 11.3 | | mg/Kg-dry | 1 | 6/4/2022 3:46:54 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 22.5 | | mg/Kg-dry | 1 | 6/3/2022 9:55:17 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 11.3 | | mg/Kg-dry | 1 | 6/3/2022 9:55:17 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 11.3 | | mg/Kg-dry | 1 | 6/3/2022 9:55:17 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 11.3 | | mg/Kg-dry | 1 | 6/3/2022 9:55:17 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 11.3 | | mg/Kg-dry | 1 | 6/3/2022 9:55:17 PM |
| Surr: 1-Chlorooctadecane | 81.9 | 50 - 150 | | %Rec | 1 | 6/4/2022 3:46:54 AM |
| Surr: o-Terphenyl | 136 | 50 - 150 | | %Rec | 1 | 6/3/2022 9:55:17 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | 15.0 | 2.26 | H | mg/Kg-dry | 1 | 5/27/2022 4:02:51 AM |
| Aliphatic Hydrocarbon (C6-C8) | 95.2 | 1.36 | EH | mg/Kg-dry | 1 | 5/27/2022 4:02:51 AM |
| Aliphatic Hydrocarbon (C8-C10) | 83.1 | 2.26 | H | mg/Kg-dry | 1 | 5/27/2022 4:02:51 AM |
| Aliphatic Hydrocarbon (C10-C12) | 126 | 0.452 | EH | mg/Kg-dry | 1 | 5/27/2022 4:02:51 AM |
| Aromatic Hydrocarbon (C8-C10) | 135 | 2.71 | EH | mg/Kg-dry | 1 | 5/27/2022 4:02:51 AM |
| Aromatic Hydrocarbon (C10-C12) | 232 | 0.452 | EH | mg/Kg-dry | 1 | 5/27/2022 4:02:51 AM |
| Aromatic Hydrocarbon (C12-C13) | 379 | 0.452 | EH | mg/Kg-dry | 1 | 5/27/2022 4:02:51 AM |
| Surr: 1,4-Difluorobenzene | 190 | 60 - 140 | SH | %Rec | 1 | 5/27/2022 4:02:51 AM |
| Surr: Bromofluorobenzene | 330 | 60 - 140 | SH | %Rec | 1 | 5/27/2022 4:02:51 AM |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 16.0 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-029
**Client Sample ID:** **TP-59-S1-5**

**Collection Date:** 5/4/2022 10:15:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 30.2 | | mg/Kg-dry | 1 | 6/4/2022 4:10:23 AM |
| Aliphatic Hydrocarbon (C10-C12) | 27.9 | 15.1 | | mg/Kg-dry | 1 | 6/4/2022 4:10:23 AM |
| Aliphatic Hydrocarbon (C12-C16) | 109 | 15.1 | | mg/Kg-dry | 1 | 6/4/2022 4:10:23 AM |
| Aliphatic Hydrocarbon (C16-C21) | 22.6 | 15.1 | | mg/Kg-dry | 1 | 6/4/2022 4:10:23 AM |
| Aliphatic Hydrocarbon (C21-C34) | 29.4 | 15.1 | | mg/Kg-dry | 1 | 6/4/2022 4:10:23 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 30.2 | | mg/Kg-dry | 1 | 6/3/2022 10:18:50 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 15.1 | | mg/Kg-dry | 1 | 6/3/2022 10:18:50 PM |
| Aromatic Hydrocarbon (C12-C16) | 25.5 | 15.1 | | mg/Kg-dry | 1 | 6/3/2022 10:18:50 PM |
| Aromatic Hydrocarbon (C16-C21) | 31.1 | 15.1 | | mg/Kg-dry | 1 | 6/3/2022 10:18:50 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 15.1 | | mg/Kg-dry | 1 | 6/3/2022 10:18:50 PM |
| Surr: 1-Chlorooctadecane | 70.1 | 50 - 150 | | %Rec | 1 | 6/4/2022 4:10:23 AM |
| Surr: o-Terphenyl | 97.7 | 50 - 150 | | %Rec | 1 | 6/3/2022 10:18:50 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.81 | H | mg/Kg-dry | 1 | 5/27/2022 4:43:36 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 2.28 | H | mg/Kg-dry | 1 | 5/27/2022 4:43:36 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 3.81 | H | mg/Kg-dry | 1 | 5/27/2022 4:43:36 AM |
| Aliphatic Hydrocarbon (C10-C12) | 25.3 | 0.761 | H | mg/Kg-dry | 1 | 5/27/2022 4:43:36 AM |
| Aromatic Hydrocarbon (C8-C10) | 9.44 | 4.57 | H | mg/Kg-dry | 1 | 5/27/2022 4:43:36 AM |
| Aromatic Hydrocarbon (C10-C12) | 52.7 | 0.761 | H | mg/Kg-dry | 1 | 5/27/2022 4:43:36 AM |
| Aromatic Hydrocarbon (C12-C13) | 422 | 0.761 | EH | mg/Kg-dry | 1 | 5/27/2022 4:43:36 AM |
| Surr: 1,4-Difluorobenzene | 87.7 | 60 - 140 | H | %Rec | 1 | 5/27/2022 4:43:36 AM |
| Surr: Bromofluorobenzene | 87.6 | 60 - 140 | H | %Rec | 1 | 5/27/2022 4:43:36 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 37.4 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-030
**Client Sample ID:** **TP-59-S2-10**

**Collection Date:** 5/4/2022 10:45:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | 53.9 | 24.1 | | mg/Kg-dry | 1 | 6/4/2022 4:33:46 AM |
| Aliphatic Hydrocarbon (C10-C12) | 439 | 12.1 | | mg/Kg-dry | 1 | 6/4/2022 4:33:46 AM |
| Aliphatic Hydrocarbon (C12-C16) | 1,090 | 12.1 | | mg/Kg-dry | 1 | 6/4/2022 4:33:46 AM |
| Aliphatic Hydrocarbon (C16-C21) | 224 | 12.1 | | mg/Kg-dry | 1 | 6/4/2022 4:33:46 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 12.1 | | mg/Kg-dry | 1 | 6/4/2022 4:33:46 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 24.1 | | mg/Kg-dry | 1 | 6/3/2022 10:42:14 PM |
| Aromatic Hydrocarbon (C10-C12) | 27.5 | 12.1 | | mg/Kg-dry | 1 | 6/3/2022 10:42:14 PM |
| Aromatic Hydrocarbon (C12-C16) | 271 | 12.1 | | mg/Kg-dry | 1 | 6/3/2022 10:42:14 PM |
| Aromatic Hydrocarbon (C16-C21) | 254 | 12.1 | | mg/Kg-dry | 1 | 6/3/2022 10:42:14 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 12.1 | | mg/Kg-dry | 1 | 6/3/2022 10:42:14 PM |
| Surr: 1-Chlorooctadecane | 89.3 | 50 - 150 | | %Rec | 1 | 6/4/2022 4:33:46 AM |
| Surr: o-Terphenyl | 124 | 50 - 150 | | %Rec | 1 | 6/3/2022 10:42:14 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.05 | H | mg/Kg-dry | 1 | 5/27/2022 5:24:25 AM |
| Aliphatic Hydrocarbon (C6-C8) | 2.32 | 1.83 | H | mg/Kg-dry | 1 | 5/27/2022 5:24:25 AM |
| Aliphatic Hydrocarbon (C8-C10) | 30.3 | 3.05 | H | mg/Kg-dry | 1 | 5/27/2022 5:24:25 AM |
| Aliphatic Hydrocarbon (C10-C12) | 213 | 0.610 | EH | mg/Kg-dry | 1 | 5/27/2022 5:24:25 AM |
| Aromatic Hydrocarbon (C8-C10) | 69.1 | 3.66 | H | mg/Kg-dry | 1 | 5/27/2022 5:24:25 AM |
| Aromatic Hydrocarbon (C10-C12) | 411 | 0.610 | EH | mg/Kg-dry | 1 | 5/27/2022 5:24:25 AM |
| Aromatic Hydrocarbon (C12-C13) | 1,670 | 0.610 | EH | mg/Kg-dry | 1 | 5/27/2022 5:24:25 AM |
| Surr: 1,4-Difluorobenzene | 87.5 | 60 - 140 | H | %Rec | 1 | 5/27/2022 5:24:25 AM |
| Surr: Bromofluorobenzene | 224 | 60 - 140 | SH | %Rec | 1 | 5/27/2022 5:24:25 AM |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 20.3 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-031
**Client Sample ID:** **TP-59-S3-15**

**Collection Date:** 5/4/2022 11:15:00 AM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 19.7 | | mg/Kg-dry | 1 | 6/4/2022 4:57:07 AM |
| Aliphatic Hydrocarbon (C10-C12) | 219 | 9.86 | | mg/Kg-dry | 1 | 6/4/2022 4:57:07 AM |
| Aliphatic Hydrocarbon (C12-C16) | 453 | 9.86 | | mg/Kg-dry | 1 | 6/4/2022 4:57:07 AM |
| Aliphatic Hydrocarbon (C16-C21) | 87.4 | 9.86 | | mg/Kg-dry | 1 | 6/4/2022 4:57:07 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 9.86 | | mg/Kg-dry | 1 | 6/4/2022 4:57:07 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 19.7 | | mg/Kg-dry | 1 | 6/3/2022 11:05:38 PM |
| Aromatic Hydrocarbon (C10-C12) | 19.8 | 9.86 | | mg/Kg-dry | 1 | 6/3/2022 11:05:38 PM |
| Aromatic Hydrocarbon (C12-C16) | 125 | 9.86 | | mg/Kg-dry | 1 | 6/3/2022 11:05:38 PM |
| Aromatic Hydrocarbon (C16-C21) | 103 | 9.86 | | mg/Kg-dry | 1 | 6/3/2022 11:05:38 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 9.86 | | mg/Kg-dry | 1 | 6/3/2022 11:05:38 PM |
| Surr: 1-Chlorooctadecane | 88.6 | 50 - 150 | | %Rec | 1 | 6/4/2022 4:57:07 AM |
| Surr: o-Terphenyl | 120 | 50 - 150 | | %Rec | 1 | 6/3/2022 11:05:38 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.02 | H | mg/Kg-dry | 1 | 5/27/2022 6:05:13 AM |
| Aliphatic Hydrocarbon (C6-C8) | 2.04 | 1.21 | H | mg/Kg-dry | 1 | 5/27/2022 6:05:13 AM |
| Aliphatic Hydrocarbon (C8-C10) | 15.6 | 2.02 | H | mg/Kg-dry | 1 | 5/27/2022 6:05:13 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.403 | H | mg/Kg-dry | 1 | 5/27/2022 6:05:13 AM |
| Aromatic Hydrocarbon (C8-C10) | 42.2 | 2.42 | H | mg/Kg-dry | 1 | 5/27/2022 6:05:13 AM |
| Aromatic Hydrocarbon (C10-C12) | 227 | 0.403 | EH | mg/Kg-dry | 1 | 5/27/2022 6:05:13 AM |
| Aromatic Hydrocarbon (C12-C13) | 748 | 0.403 | EH | mg/Kg-dry | 1 | 5/27/2022 6:05:13 AM |
| Surr: 1,4-Difluorobenzene | 89.3 | 60 - 140 | H | %Rec | 1 | 5/27/2022 6:05:13 AM |
| Surr: Bromofluorobenzene | 207 | 60 - 140 | SH | %Rec | 1 | 5/27/2022 6:05:13 AM |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 16.0 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-032
**Client Sample ID:** **TP-20-S1-5**

**Collection Date:** 5/4/2022 4:25:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 26.3 | | mg/Kg-dry | 1 | 6/4/2022 5:20:37 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 13.2 | | mg/Kg-dry | 1 | 6/4/2022 5:20:37 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 13.2 | | mg/Kg-dry | 1 | 6/4/2022 5:20:37 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.2 | | mg/Kg-dry | 1 | 6/4/2022 5:20:37 AM |
| Aliphatic Hydrocarbon (C21-C34) | 23.1 | 13.2 | | mg/Kg-dry | 1 | 6/4/2022 5:20:37 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 26.3 | | mg/Kg-dry | 1 | 6/3/2022 11:29:13 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.2 | | mg/Kg-dry | 1 | 6/3/2022 11:29:13 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.2 | | mg/Kg-dry | 1 | 6/3/2022 11:29:13 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 13.2 | | mg/Kg-dry | 1 | 6/3/2022 11:29:13 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.2 | | mg/Kg-dry | 1 | 6/3/2022 11:29:13 PM |
| Surr: 1-Chlorooctadecane | 78.9 | 50 - 150 | | %Rec | 1 | 6/4/2022 5:20:37 AM |
| Surr: o-Terphenyl | 104 | 50 - 150 | | %Rec | 1 | 6/3/2022 11:29:13 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.25 | H | mg/Kg-dry | 1 | 5/27/2022 6:45:55 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.95 | H | mg/Kg-dry | 1 | 5/27/2022 6:45:55 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 3.25 | H | mg/Kg-dry | 1 | 5/27/2022 6:45:55 AM |
| Aliphatic Hydrocarbon (C10-C12) | 2.00 | 0.649 | H | mg/Kg-dry | 1 | 5/27/2022 6:45:55 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.90 | H | mg/Kg-dry | 1 | 5/27/2022 6:45:55 AM |
| Aromatic Hydrocarbon (C10-C12) | 6.22 | 0.649 | H | mg/Kg-dry | 1 | 5/27/2022 6:45:55 AM |
| Aromatic Hydrocarbon (C12-C13) | 40.7 | 0.649 | H | mg/Kg-dry | 1 | 5/27/2022 6:45:55 AM |
| Surr: 1,4-Difluorobenzene | 89.3 | 60 - 140 | H | %Rec | 1 | 5/27/2022 6:45:55 AM |
| Surr: Bromofluorobenzene | 84.3 | 60 - 140 | H | %Rec | 1 | 5/27/2022 6:45:55 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 33.8 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-033
**Client Sample ID:** **TP-29-S1-5**

**Collection Date:** 5/4/2022 5:00:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 20.8 | | mg/Kg-dry | 1 | 6/4/2022 5:43:59 AM |
| Aliphatic Hydrocarbon (C10-C12) | 13.8 | 10.4 | | mg/Kg-dry | 1 | 6/4/2022 5:43:59 AM |
| Aliphatic Hydrocarbon (C12-C16) | 35.7 | 10.4 | | mg/Kg-dry | 1 | 6/4/2022 5:43:59 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.4 | | mg/Kg-dry | 1 | 6/4/2022 5:43:59 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.4 | | mg/Kg-dry | 1 | 6/4/2022 5:43:59 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 20.8 | | mg/Kg-dry | 1 | 6/3/2022 11:52:35 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.4 | | mg/Kg-dry | 1 | 6/3/2022 11:52:35 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.4 | | mg/Kg-dry | 1 | 6/3/2022 11:52:35 PM |
| Aromatic Hydrocarbon (C16-C21) | 11.2 | 10.4 | | mg/Kg-dry | 1 | 6/3/2022 11:52:35 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.4 | | mg/Kg-dry | 1 | 6/3/2022 11:52:35 PM |
| Surr: 1-Chlorooctadecane | 69.0 | 50 - 150 | | %Rec | 1 | 6/4/2022 5:43:59 AM |
| Surr: o-Terphenyl | 92.5 | 50 - 150 | | %Rec | 1 | 6/3/2022 11:52:35 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.06 | H | mg/Kg-dry | 1 | 5/27/2022 10:50:27 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.24 | H | mg/Kg-dry | 1 | 5/27/2022 10:50:27 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.06 | H | mg/Kg-dry | 1 | 5/27/2022 10:50:27 AM |
| Aliphatic Hydrocarbon (C10-C12) | 0.496 | 0.412 | H | mg/Kg-dry | 1 | 5/27/2022 10:50:27 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 2.47 | H | mg/Kg-dry | 1 | 5/27/2022 10:50:27 AM |
| Aromatic Hydrocarbon (C10-C12) | 2.88 | 0.412 | H | mg/Kg-dry | 1 | 5/27/2022 10:50:27 AM |
| Aromatic Hydrocarbon (C12-C13) | 11.4 | 0.412 | H | mg/Kg-dry | 1 | 5/27/2022 10:50:27 AM |
| Surr: 1,4-Difluorobenzene | 87.8 | 60 - 140 | H | %Rec | 1 | 5/27/2022 10:50:27 AM |
| Surr: Bromofluorobenzene | 85.6 | 60 - 140 | H | %Rec | 1 | 5/27/2022 10:50:27 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 14.6 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-034
**Client Sample ID:** **TP-42-S1-2.5**

**Collection Date:** 5/4/2022 1:10:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 23.2 | | mg/Kg-dry | 1 | 6/7/2022 12:05:39 AM |
| Aliphatic Hydrocarbon (C10-C12) | 60.1 | 11.6 | | mg/Kg-dry | 1 | 6/7/2022 12:05:39 AM |
| Aliphatic Hydrocarbon (C12-C16) | 382 | 11.6 | | mg/Kg-dry | 1 | 6/7/2022 12:05:39 AM |
| Aliphatic Hydrocarbon (C16-C21) | 531 | 11.6 | | mg/Kg-dry | 1 | 6/7/2022 12:05:39 AM |
| Aliphatic Hydrocarbon (C21-C34) | 1,670 | 11.6 | | mg/Kg-dry | 1 | 6/7/2022 12:05:39 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 23.2 | | mg/Kg-dry | 1 | 6/6/2022 6:34:45 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 11.6 | | mg/Kg-dry | 1 | 6/6/2022 6:34:45 PM |
| Aromatic Hydrocarbon (C12-C16) | 136 | 11.6 | | mg/Kg-dry | 1 | 6/6/2022 6:34:45 PM |
| Aromatic Hydrocarbon (C16-C21) | 1,490 | 11.6 | | mg/Kg-dry | 1 | 6/6/2022 6:34:45 PM |
| Aromatic Hydrocarbon (C21-C34) | 3,310 | 116 | D | mg/Kg-dry | 10 | 6/7/2022 10:42:54 AM |
| Surr: 1-Chlorooctadecane | 83.4 | 50 - 150 | | %Rec | 1 | 6/7/2022 12:05:39 AM |
| Surr: o-Terphenyl | 96.7 | 50 - 150 | | %Rec | 1 | 6/6/2022 6:34:45 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.48 | H | mg/Kg-dry | 1 | 5/27/2022 11:31:11 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.49 | H | mg/Kg-dry | 1 | 5/27/2022 11:31:11 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.48 | H | mg/Kg-dry | 1 | 5/27/2022 11:31:11 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.495 | H | mg/Kg-dry | 1 | 5/27/2022 11:31:11 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 2.97 | H | mg/Kg-dry | 1 | 5/27/2022 11:31:11 AM |
| Aromatic Hydrocarbon (C10-C12) | 1.75 | 0.495 | H | mg/Kg-dry | 1 | 5/27/2022 11:31:11 AM |
| Aromatic Hydrocarbon (C12-C13) | 15.6 | 0.495 | H | mg/Kg-dry | 1 | 5/27/2022 11:31:11 AM |
| Surr: 1,4-Difluorobenzene | 86.4 | 60 - 140 | H | %Rec | 1 | 5/27/2022 11:31:11 AM |
| Surr: Bromofluorobenzene | 82.5 | 60 - 140 | H | %Rec | 1 | 5/27/2022 11:31:11 AM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 23.3 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-035
**Client Sample ID:** **TP-42-S2-5**

**Collection Date:** 5/4/2022 1:40:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 24.7 | | mg/Kg-dry | 1 | 6/7/2022 1:39:52 AM |
| Aliphatic Hydrocarbon (C10-C12) | 59.5 | 12.3 | | mg/Kg-dry | 1 | 6/7/2022 1:39:52 AM |
| Aliphatic Hydrocarbon (C12-C16) | 356 | 12.3 | | mg/Kg-dry | 1 | 6/7/2022 1:39:52 AM |
| Aliphatic Hydrocarbon (C16-C21) | 383 | 12.3 | | mg/Kg-dry | 1 | 6/7/2022 1:39:52 AM |
| Aliphatic Hydrocarbon (C21-C34) | 804 | 12.3 | | mg/Kg-dry | 1 | 6/7/2022 1:39:52 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 24.7 | | mg/Kg-dry | 1 | 6/6/2022 8:09:39 PM |
| Aromatic Hydrocarbon (C10-C12) | 16.8 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 8:09:39 PM |
| Aromatic Hydrocarbon (C12-C16) | 195 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 8:09:39 PM |
| Aromatic Hydrocarbon (C16-C21) | 1,290 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 8:09:39 PM |
| Aromatic Hydrocarbon (C21-C34) | 2,410 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 8:09:39 PM |
| Surr: 1-Chlorooctadecane | 72.8 | 50 - 150 | | %Rec | 1 | 6/7/2022 1:39:52 AM |
| Surr: o-Terphenyl | 100 | 50 - 150 | | %Rec | 1 | 6/6/2022 8:09:39 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.93 | H | mg/Kg-dry | 1 | 5/27/2022 12:11:52 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.76 | H | mg/Kg-dry | 1 | 5/27/2022 12:11:52 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.93 | H | mg/Kg-dry | 1 | 5/27/2022 12:11:52 PM |
| Aliphatic Hydrocarbon (C10-C12) | 22.5 | 0.585 | H | mg/Kg-dry | 1 | 5/27/2022 12:11:52 PM |
| Aromatic Hydrocarbon (C8-C10) | 8.99 | 3.51 | H | mg/Kg-dry | 1 | 5/27/2022 12:11:52 PM |
| Aromatic Hydrocarbon (C10-C12) | 89.5 | 0.585 | H | mg/Kg-dry | 1 | 5/27/2022 12:11:52 PM |
| Aromatic Hydrocarbon (C12-C13) | 827 | 0.585 | EH | mg/Kg-dry | 1 | 5/27/2022 12:11:52 PM |
| Surr: 1,4-Difluorobenzene | 88.1 | 60 - 140 | H | %Rec | 1 | 5/27/2022 12:11:52 PM |
| Surr: Bromofluorobenzene | 87.6 | 60 - 140 | H | %Rec | 1 | 5/27/2022 12:11:52 PM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 22.2 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-036
**Client Sample ID:** **TP-51-S1-5**

**Collection Date:** 5/4/2022 12:50:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 24.5 | | mg/Kg-dry | 1 | 6/6/2022 10:31:31 PM |
| Aliphatic Hydrocarbon (C10-C12) | 126 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 10:31:31 PM |
| Aliphatic Hydrocarbon (C12-C16) | 553 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 10:31:31 PM |
| Aliphatic Hydrocarbon (C16-C21) | 307 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 10:31:31 PM |
| Aliphatic Hydrocarbon (C21-C34) | 33.0 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 10:31:31 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 24.5 | | mg/Kg-dry | 1 | 6/6/2022 4:59:38 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 4:59:38 PM |
| Aromatic Hydrocarbon (C12-C16) | 137 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 4:59:38 PM |
| Aromatic Hydrocarbon (C16-C21) | 392 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 4:59:38 PM |
| Aromatic Hydrocarbon (C21-C34) | 48.8 | 12.3 | | mg/Kg-dry | 1 | 6/6/2022 4:59:38 PM |
| Surr: 1-Chlorooctadecane | 81.9 | 50 - 150 | | %Rec | 1 | 6/6/2022 10:31:31 PM |
| Surr: o-Terphenyl | 118 | 50 - 150 | | %Rec | 1 | 6/6/2022 4:59:38 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.67 | H | mg/Kg-dry | 1 | 5/27/2022 12:52:40 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.60 | H | mg/Kg-dry | 1 | 5/27/2022 12:52:40 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.67 | H | mg/Kg-dry | 1 | 5/27/2022 12:52:40 PM |
| Aliphatic Hydrocarbon (C10-C12) | 40.1 | 0.535 | H | mg/Kg-dry | 1 | 5/27/2022 12:52:40 PM |
| Aromatic Hydrocarbon (C8-C10) | 4.49 | 3.21 | H | mg/Kg-dry | 1 | 5/27/2022 12:52:40 PM |
| Aromatic Hydrocarbon (C10-C12) | 115 | 0.535 | EH | mg/Kg-dry | 1 | 5/27/2022 12:52:40 PM |
| Aromatic Hydrocarbon (C12-C13) | 1,160 | 0.535 | EH | mg/Kg-dry | 1 | 5/27/2022 12:52:40 PM |
| Surr: 1,4-Difluorobenzene | 86.3 | 60 - 140 | H | %Rec | 1 | 5/27/2022 12:52:40 PM |
| Surr: Bromofluorobenzene | 85.2 | 60 - 140 | H | %Rec | 1 | 5/27/2022 12:52:40 PM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 22.2 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Project:** 205113
**Lab ID:** 2205254-037
**Client Sample ID:** **TP-51-S2-10**

**Collection Date:** 5/4/2022 1:10:00 PM
**Matrix:** Soil

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 20.7 | | mg/Kg-dry | 1 | 6/6/2022 10:55:01 PM |
| Aliphatic Hydrocarbon (C10-C12) | 109 | 10.3 | | mg/Kg-dry | 1 | 6/6/2022 10:55:01 PM |
| Aliphatic Hydrocarbon (C12-C16) | 471 | 10.3 | | mg/Kg-dry | 1 | 6/6/2022 10:55:01 PM |
| Aliphatic Hydrocarbon (C16-C21) | 255 | 10.3 | | mg/Kg-dry | 1 | 6/6/2022 10:55:01 PM |
| Aliphatic Hydrocarbon (C21-C34) | 28.3 | 10.3 | | mg/Kg-dry | 1 | 6/6/2022 10:55:01 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 20.7 | | mg/Kg-dry | 1 | 6/6/2022 5:23:29 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.3 | | mg/Kg-dry | 1 | 6/6/2022 5:23:29 PM |
| Aromatic Hydrocarbon (C12-C16) | 134 | 10.3 | | mg/Kg-dry | 1 | 6/6/2022 5:23:29 PM |
| Aromatic Hydrocarbon (C16-C21) | 327 | 10.3 | | mg/Kg-dry | 1 | 6/6/2022 5:23:29 PM |
| Aromatic Hydrocarbon (C21-C34) | 20.6 | 10.3 | | mg/Kg-dry | 1 | 6/6/2022 5:23:29 PM |
| Surr: 1-Chlorooctadecane | 82.2 | 50 - 150 | | %Rec | 1 | 6/6/2022 10:55:01 PM |
| Surr: o-Terphenyl | 112 | 50 - 150 | | %Rec | 1 | 6/6/2022 5:23:29 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.35 | H | mg/Kg-dry | 1 | 5/27/2022 1:33:30 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.41 | H | mg/Kg-dry | 1 | 5/27/2022 1:33:30 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.35 | H | mg/Kg-dry | 1 | 5/27/2022 1:33:30 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.471 | H | mg/Kg-dry | 1 | 5/27/2022 1:33:30 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 2.82 | H | mg/Kg-dry | 1 | 5/27/2022 1:33:30 PM |
| Aromatic Hydrocarbon (C10-C12) | 1.57 | 0.471 | H | mg/Kg-dry | 1 | 5/27/2022 1:33:30 PM |
| Aromatic Hydrocarbon (C12-C13) | 22.6 | 0.471 | H | mg/Kg-dry | 1 | 5/27/2022 1:33:30 PM |
| Surr: 1,4-Difluorobenzene | 87.0 | 60 - 140 | H | %Rec | 1 | 5/27/2022 1:33:30 PM |
| Surr: Bromofluorobenzene | 85.4 | 60 - 140 | H | %Rec | 1 | 5/27/2022 1:33:30 PM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 19.1 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

# Analytical Report

Work Order: **2205254**
Date Reported:

**Client:** Friedman & Bruya
**Collection Date:** 5/4/2022 12:40:00 PM
**Project:** 205113
**Lab ID:** 2205254-038
**Matrix:** Soil
**Client Sample ID:** **TP-51-S100-5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 36433 | | Analyst: MM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 22.6 | | mg/Kg-dry | 1 | 6/6/2022 11:18:41 PM |
| Aliphatic Hydrocarbon (C10-C12) | 138 | 11.3 | | mg/Kg-dry | 1 | 6/6/2022 11:18:41 PM |
| Aliphatic Hydrocarbon (C12-C16) | 597 | 11.3 | | mg/Kg-dry | 1 | 6/6/2022 11:18:41 PM |
| Aliphatic Hydrocarbon (C16-C21) | 339 | 11.3 | | mg/Kg-dry | 1 | 6/6/2022 11:18:41 PM |
| Aliphatic Hydrocarbon (C21-C34) | 38.6 | 11.3 | | mg/Kg-dry | 1 | 6/6/2022 11:18:41 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 22.6 | | mg/Kg-dry | 1 | 6/6/2022 5:47:10 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 11.3 | | mg/Kg-dry | 1 | 6/6/2022 5:47:10 PM |
| Aromatic Hydrocarbon (C12-C16) | 178 | 11.3 | | mg/Kg-dry | 1 | 6/6/2022 5:47:10 PM |
| Aromatic Hydrocarbon (C16-C21) | 414 | 11.3 | | mg/Kg-dry | 1 | 6/6/2022 5:47:10 PM |
| Aromatic Hydrocarbon (C21-C34) | 53.8 | 11.3 | | mg/Kg-dry | 1 | 6/6/2022 5:47:10 PM |
| Surr: 1-Chlorooctadecane | 79.6 | 50 - 150 | | %Rec | 1 | 6/6/2022 11:18:41 PM |
| Surr: o-Terphenyl | 108 | 50 - 150 | | %Rec | 1 | 6/6/2022 5:47:10 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 36504 | | Analyst: SG |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.27 | H | mg/Kg-dry | 1 | 5/27/2022 2:14:19 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.36 | H | mg/Kg-dry | 1 | 5/27/2022 2:14:19 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.27 | H | mg/Kg-dry | 1 | 5/27/2022 2:14:19 PM |
| Aliphatic Hydrocarbon (C10-C12) | 30.5 | 0.454 | H | mg/Kg-dry | 1 | 5/27/2022 2:14:19 PM |
| Aromatic Hydrocarbon (C8-C10) | 3.20 | 2.72 | H | mg/Kg-dry | 1 | 5/27/2022 2:14:19 PM |
| Aromatic Hydrocarbon (C10-C12) | 75.0 | 0.454 | EH | mg/Kg-dry | 1 | 5/27/2022 2:14:19 PM |
| Aromatic Hydrocarbon (C12-C13) | 917 | 0.454 | EH | mg/Kg-dry | 1 | 5/27/2022 2:14:19 PM |
| Surr: 1,4-Difluorobenzene | 88.1 | 60 - 140 | H | %Rec | 1 | 5/27/2022 2:14:19 PM |
| Surr: Bromofluorobenzene | 88.1 | 60 - 140 | H | %Rec | 1 | 5/27/2022 2:14:19 PM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R75634 | | Analyst: ALB |
| Percent Moisture | 23.0 | 0.500 | | wt% | 1 | 5/24/2022 9:18:54 AM |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **MB-36430** | SampType: **MBLK** | | | Units: **mg/Kg** | | Prep Date: **5/13/2022** | | RunNo: **75875** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **36430** | | | | | Analysis Date: **5/31/2022** | | SeqNo: **1556428** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aromatic Hydrocarbon (C8-C10) | ND | 20.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.0 | | | | | | | | | |
| Surr: o-Terphenyl | 99.5 | | 100.0 | | 99.5 | 50 | 150 | | | | |

| Sample ID: **LCS-36430** | SampType: **LCS** | | | Units: **mg/Kg** | | Prep Date: **5/13/2022** | | RunNo: **75875** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **36430** | | | | | Analysis Date: **5/31/2022** | | SeqNo: **1556429** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aromatic Hydrocarbon (C8-C10) | 132 | 20.0 | 250.0 | 0 | 52.6 | 24 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 95.2 | 10.0 | 125.0 | 0 | 76.1 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 111 | 10.0 | 125.0 | 0 | 89.2 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 121 | 10.0 | 125.0 | 0 | 96.5 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 89.9 | 10.0 | 125.0 | 0 | 71.9 | 70 | 130 | | | | |
| Surr: o-Terphenyl | 107 | | 100.0 | | 107 | 50 | 150 | | | | |

| Sample ID: **2205254-003AMS** | SampType: **MS** | | | Units: **mg/Kg-dry** | | Prep Date: **5/13/2022** | | RunNo: **75875** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TP-21-S200-10** | Batch ID: **36430** | | | | | Analysis Date: **5/31/2022** | | SeqNo: **1556433** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aromatic Hydrocarbon (C8-C10) | 134 | 23.2 | 289.9 | 0 | 46.4 | 14 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 104 | 11.6 | 144.9 | 0 | 71.7 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 113 | 11.6 | 144.9 | 0 | 78.2 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 133 | 11.6 | 144.9 | 0 | 91.8 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 108 | 11.6 | 144.9 | 0 | 74.3 | 70 | 130 | | | | |
| Surr: o-Terphenyl | 114 | | 115.9 | | 98.5 | 50 | 150 | | | | |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **2205254-003AMSD** | SampType: **MSD** | | | Units: **mg/Kg-dry** | | Prep Date: **5/13/2022** | | RunNo: **75875** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TP-21-S200-10** | Batch ID: **36430** | | | | | Analysis Date: **5/31/2022** | | SeqNo: **1556434** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aromatic Hydrocarbon (C8-C10) | 133 | 23.8 | 297.1 | 0 | 44.6 | 14 | 130 | 134.4 | 1.33 | 30 | |
| Aromatic Hydrocarbon (C10-C12) | 107 | 11.9 | 148.6 | 0 | 72.0 | 70 | 130 | 104.0 | 2.87 | 30 | |
| Aromatic Hydrocarbon (C12-C16) | 114 | 11.9 | 148.6 | 0 | 76.8 | 70 | 130 | 113.4 | 0.613 | 30 | |
| Aromatic Hydrocarbon (C16-C21) | 137 | 11.9 | 148.6 | 0 | 92.2 | 70 | 130 | 133.1 | 2.81 | 30 | |
| Aromatic Hydrocarbon (C21-C34) | 105 | 11.9 | 148.6 | 0 | 70.8 | 70 | 130 | 107.6 | 2.29 | 30 | |
| Surr: o-Terphenyl | 116 | | 118.8 | | 97.9 | 50 | 150 | | 0 | | |

| Sample ID: **MB-36430** | SampType: **MBLK** | | | Units: **mg/Kg** | | Prep Date: **5/13/2022** | | RunNo: **75876** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **36430** | | | | | Analysis Date: **5/31/2022** | | SeqNo: **1556574** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aliphatic Hydrocarbon (C8-C10) | ND | 20.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 78.3 | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.0 | | | | | | | | | |
| Surr: 1-Chlorooctadecane | 68.5 | | 100.0 | | 68.5 | 50 | 150 | | | | |

| Sample ID: **LCS-36430** | SampType: **LCS** | | | Units: **mg/Kg** | | Prep Date: **5/13/2022** | | RunNo: **75876** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **36430** | | | | | Analysis Date: **5/31/2022** | | SeqNo: **1556575** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aliphatic Hydrocarbon (C8-C10) | 99.9 | 20.0 | 250.0 | 0 | 39.9 | 15.9 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 90.0 | 10.0 | 125.0 | 0 | 72.0 | 70 | 130 | | | | B |
| Aliphatic Hydrocarbon (C12-C16) | 112 | 10.0 | 125.0 | 0 | 89.9 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 110 | 10.0 | 125.0 | 0 | 88.4 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 117 | 10.0 | 125.0 | 0 | 93.6 | 70 | 130 | | | | |
| Surr: 1-Chlorooctadecane | 84.6 | | 100.0 | | 84.6 | 50 | 150 | | | | |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **2205254-003AMS** | SampType: **MS** | | | Units: **mg/Kg-dry** | | Prep Date: **5/13/2022** | | RunNo: **75876** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TP-21-S200-10** | Batch ID: **36430** | | | | | Analysis Date: **6/1/2022** | | SeqNo: **1556580** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aliphatic Hydrocarbon (C8-C10) | 130 | 23.2 | 289.9 | 0 | 44.8 | 5 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 115 | 11.6 | 144.9 | 0 | 79.0 | 70 | 130 | | | | B |
| Aliphatic Hydrocarbon (C12-C16) | 113 | 11.6 | 144.9 | 0 | 77.7 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 102 | 11.6 | 144.9 | 0 | 70.3 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 106 | 11.6 | 144.9 | 0 | 73.5 | 70 | 130 | | | | |
| Surr: 1-Chlorooctadecane | 75.6 | | 115.9 | | 65.2 | 50 | 150 | | | | |

| Sample ID: **2205254-003AMSD** | SampType: **MSD** | | | Units: **mg/Kg-dry** | | Prep Date: **5/13/2022** | | RunNo: **75876** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TP-21-S200-10** | Batch ID: **36430** | | | | | Analysis Date: **6/1/2022** | | SeqNo: **1556581** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aliphatic Hydrocarbon (C8-C10) | 152 | 23.8 | 297.1 | 0 | 51.1 | 5 | 130 | 0 | 200 | 30 | |
| Aliphatic Hydrocarbon (C10-C12) | 125 | 11.9 | 148.6 | 0 | 84.3 | 70 | 130 | 0 | 200 | 30 | B |
| Aliphatic Hydrocarbon (C12-C16) | 125 | 11.9 | 148.6 | 0 | 84.3 | 70 | 130 | 0 | 200 | 30 | |
| Aliphatic Hydrocarbon (C16-C21) | 112 | 11.9 | 148.6 | 0 | 75.6 | 70 | 130 | 0 | 200 | 30 | |
| Aliphatic Hydrocarbon (C21-C34) | 114 | 11.9 | 148.6 | 0 | 76.5 | 70 | 130 | 0 | 200 | 30 | |
| Surr: 1-Chlorooctadecane | 82.8 | | 118.8 | | 69.6 | 50 | 150 | | 0 | | |

| Sample ID: **MB-36433** | SampType: **MBLK** | | | Units: **mg/Kg** | | Prep Date: **5/13/2022** | | RunNo: **75906** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **36433** | | | | | Analysis Date: **6/2/2022** | | SeqNo: **1556864** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aliphatic Hydrocarbon (C8-C10) | ND | 20.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.0 | | | | | | | | | |
| Surr: 1-Chlorooctadecane | 80.0 | | 100.0 | | 80.0 | 50 | 150 | | | | |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **LCS-36433** SampType: **LCS** Units: **mg/Kg** Prep Date: **5/13/2022** RunNo: **75906**
Client ID: **LCSS** Batch ID: **36433** Analysis Date: **6/2/2022** SeqNo: **1556865**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 144 | 20.0 | 250.0 | 0 | 57.7 | 15.9 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 120 | 10.0 | 125.0 | 0 | 96.3 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 134 | 10.0 | 125.0 | 0 | 107 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 116 | 10.0 | 125.0 | 0 | 92.9 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 100 | 10.0 | 125.0 | 0 | 80.2 | 70 | 130 | | | | |
| Surr: 1-Chlorooctadecane | 92.8 | | 100.0 | | 92.8 | 50 | 150 | | | | |

Sample ID: **2205254-020AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/13/2022** RunNo: **75906**
Client ID: **TP-49-S1-2.5** Batch ID: **36433** Analysis Date: **6/3/2022** SeqNo: **1556916**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 199 | 25.2 | 314.6 | 0 | 63.2 | 5 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 269 | 12.6 | 157.3 | 93.92 | 111 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 285 | 12.6 | 157.3 | 63.24 | 141 | 70 | 130 | | | | S |
| Aliphatic Hydrocarbon (C16-C21) | 167 | 12.6 | 157.3 | 5.362 | 103 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 152 | 12.6 | 157.3 | 27.84 | 79.0 | 70 | 130 | | | | |
| Surr: 1-Chlorooctadecane | 107 | | 125.8 | | 85.4 | 50 | 150 | | | | |

**NOTES:**
S - Outlying spike recovery observed for (C12-C16).

Sample ID: **2205254-020AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **5/13/2022** RunNo: **75906**
Client ID: **TP-49-S1-2.5** Batch ID: **36433** Analysis Date: **6/3/2022** SeqNo: **1556868**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 240 | 22.6 | 282.9 | 0 | 84.9 | 5 | 130 | 198.8 | 18.9 | 30 | |
| Aliphatic Hydrocarbon (C10-C12) | 449 | 11.3 | 141.4 | 93.92 | 251 | 70 | 130 | 268.7 | 50.3 | 30 | RS |
| Aliphatic Hydrocarbon (C12-C16) | 611 | 11.3 | 141.4 | 63.24 | 388 | 70 | 130 | 284.6 | 72.9 | 30 | RS |
| Aliphatic Hydrocarbon (C16-C21) | 286 | 11.3 | 141.4 | 5.362 | 198 | 70 | 130 | 167.4 | 52.2 | 30 | RS |
| Aliphatic Hydrocarbon (C21-C34) | 220 | 11.3 | 141.4 | 27.84 | 136 | 70 | 130 | 152.1 | 36.5 | 30 | RS |
| Surr: 1-Chlorooctadecane | 82.0 | | 113.2 | | 72.4 | 50 | 150 | | 0 | | |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **2205254-020AMSD** | SampType: **MSD** | Units: **mg/Kg-dry** | Prep Date: **5/13/2022** | RunNo: **75906** |
|---|---|---|---|---|
| Client ID: **TP-49-S1-2.5** | Batch ID: **36433** | | Analysis Date: **6/3/2022** | SeqNo: **1556868** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|

**NOTES:**
SR - Outlying spike recovery(ies) and high RPD due to sample inhomogeneity.

| Sample ID: **MB-36433** | SampType: **MBLK** | Units: **mg/Kg** | Prep Date: **5/13/2022** | RunNo: **75907** |
|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **36433** | | Analysis Date: **6/3/2022** | SeqNo: **1556918** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 20.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.0 | | | | | | | | | |
| Surr: o-Terphenyl | 120 | | 100.0 | | 120 | 50 | 150 | | | | |

| Sample ID: **LCS-36433** | SampType: **LCS** | Units: **mg/Kg** | Prep Date: **5/13/2022** | RunNo: **75907** |
|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **36433** | | Analysis Date: **6/3/2022** | SeqNo: **1556919** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 167 | 20.0 | 250.0 | 0 | 66.9 | 24 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 125 | 10.0 | 125.0 | 0 | 100 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 148 | 10.0 | 125.0 | 0 | 118 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 141 | 10.0 | 125.0 | 0 | 113 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 133 | 10.0 | 125.0 | 0 | 106 | 70 | 130 | | | | |
| Surr: o-Terphenyl | 136 | | 100.0 | | 136 | 50 | 150 | | | | |

| Sample ID: **2205254-020AMS** | SampType: **MS** | Units: **mg/Kg-dry** | Prep Date: **5/13/2022** | RunNo: **75907** |
|---|---|---|---|---|
| Client ID: **TP-49-S1-2.5** | Batch ID: **36433** | | Analysis Date: **6/3/2022** | SeqNo: **1556971** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 192 | 25.2 | 314.6 | 0 | 61.1 | 14 | 130 | | | | |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **2205254-020AMS** | SampType: **MS** | | | Units: **mg/Kg-dry** | | Prep Date: **5/13/2022** | | RunNo: **75907** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TP-49-S1-2.5** | Batch ID: **36433** | | | | | Analysis Date: **6/3/2022** | | SeqNo: **1556971** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aromatic Hydrocarbon (C10-C12) | 154 | 12.6 | 157.3 | 9.662 | 91.8 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 211 | 12.6 | 157.3 | 16.98 | 123 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 156 | 12.6 | 157.3 | 0 | 99.2 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 158 | 12.6 | 157.3 | 0 | 101 | 70 | 130 | | | | |
| Surr: o-Terphenyl | 155 | | 125.8 | | 123 | 50 | 150 | | | | |

| Sample ID: **2205254-020AMSD** | SampType: **MSD** | | | Units: **mg/Kg-dry** | | Prep Date: **5/13/2022** | | RunNo: **75907** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TP-49-S1-2.5** | Batch ID: **36433** | | | | | Analysis Date: **6/3/2022** | | SeqNo: **1556972** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aromatic Hydrocarbon (C8-C10) | 161 | 22.6 | 282.9 | 0 | 57.0 | 14 | 130 | 192.2 | 17.5 | 30 | |
| Aromatic Hydrocarbon (C10-C12) | 140 | 11.3 | 141.4 | 9.662 | 92.0 | 70 | 130 | 154.1 | 9.74 | 30 | |
| Aromatic Hydrocarbon (C12-C16) | 284 | 11.3 | 141.4 | 16.98 | 189 | 70 | 130 | 211.0 | 29.4 | 30 | S |
| Aromatic Hydrocarbon (C16-C21) | 109 | 11.3 | 141.4 | 0 | 77.4 | 70 | 130 | 156.0 | 35.0 | 30 | R |
| Aromatic Hydrocarbon (C21-C34) | 172 | 11.3 | 141.4 | 0 | 121 | 70 | 130 | 158.5 | 7.93 | 30 | |
| Surr: o-Terphenyl | 125 | | 113.2 | | 110 | 50 | 150 | | 0 | | |

**NOTES:**
S & R - Outlying spike recovery(ies) and high RPD due to sample inhomogeneity.

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **LCS-36461** SampType: **LCS** Units: **mg/Kg** Prep Date: **5/16/2022** RunNo: **75621**
Client ID: **LCSS** Batch ID: **36461** Analysis Date: **5/16/2022** SeqNo: **1554332**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | 65.4 | 2.50 | 30.00 | 0 | 218 | 70 | 130 | | | | S |
| Aliphatic Hydrocarbon (C6-C8) | 10.9 | 1.50 | 10.00 | 0 | 109 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C8-C10) | 8.07 | 2.50 | 10.00 | 0 | 80.7 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 10.2 | 0.500 | 10.00 | 0 | 102 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C8-C10) | 46.6 | 3.00 | 40.00 | 0 | 117 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 8.84 | 0.500 | 10.00 | 0 | 88.4 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C13) | 2,040 | 0.500 | 10.00 | 0 | 20,400 | 70 | 130 | | | | S |
| Surr: 1,4-Difluorobenzene | 2.93 | | 2.500 | | 117 | 60 | 140 | | | | |
| Surr: Bromofluorobenzene | 2.25 | | 2.500 | | 89.9 | 60 | 140 | | | | |

**NOTES:**
S - Outlying spike recovery observed (high bias). Detections will be qualified with a Q.

Sample ID: **MB-36461** SampType: **MBLK** Units: **mg/Kg** Prep Date: **5/16/2022** RunNo: **75621**
Client ID: **MBLKS** Batch ID: **36461** Analysis Date: **5/16/2022** SeqNo: **1551514**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.50 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.50 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.50 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.500 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.00 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 0.500 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C12-C13) | ND | 0.500 | | 0 | 0 | | | | | | |
| Surr: 1,4-Difluorobenzene | 2.30 | | 2.500 | | 91.9 | 60 | 140 | | | | |
| Surr: Bromofluorobenzene | 1.95 | | 2.500 | | 77.9 | 60 | 140 | | | | |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **2205254-011Bdup** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **5/16/2022** RunNo: **75621**
Client ID: **TP-34-S1-2.5** Batch ID: **36461** Analysis Date: **5/17/2022** SeqNo: **1551511**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.09 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C6-C8) | 1.92 | 1.85 | | 0 | 0 | | | 1.696 | 12.3 | 25 | |
| Aliphatic Hydrocarbon (C8-C10) | 19.9 | 3.09 | | 0 | 0 | | | 17.22 | 14.4 | 25 | |
| Aliphatic Hydrocarbon (C10-C12) | 91.2 | 0.617 | | 0 | 0 | | | 88.00 | 3.61 | 25 | |
| Aromatic Hydrocarbon (C8-C10) | 45.0 | 3.70 | | 0 | 0 | | | 41.28 | 8.65 | 25 | |
| Aromatic Hydrocarbon (C10-C12) | 514 | 0.617 | | 0 | 0 | | | 500.2 | 2.75 | 25 | |
| Aromatic Hydrocarbon (C12-C13) | 1,940 | 0.617 | | 0 | 0 | | | 1,630 | 17.4 | 25 | Q |
| Surr: 1,4-Difluorobenzene | 2.77 | | 3.085 | | 89.9 | 60 | 140 | | 0 | | |
| Surr: Bromofluorobenzene | 4.75 | | 3.085 | | 154 | 60 | 140 | | 0 | | S |

**NOTES:**
S - Outlying surrogate recovery attributed to TPH interference.
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

Sample ID: **2205254-024BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/16/2022** RunNo: **75621**
Client ID: **TP-49-S5-18** Batch ID: **36461** Analysis Date: **5/17/2022** SeqNo: **1554329**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | 68.3 | 1.97 | 23.67 | 30.75 | 159 | 70 | 130 | | | | S |
| Aliphatic Hydrocarbon (C6-C8) | 107 | 1.18 | 7.891 | 109.2 | -26.1 | 70 | 130 | | | | S |
| Aliphatic Hydrocarbon (C8-C10) | 80.1 | 1.97 | 7.891 | 86.19 | -77.6 | 70 | 130 | | | | S |
| Aliphatic Hydrocarbon (C10-C12) | 95.4 | 0.395 | 7.891 | 93.84 | 20.3 | 70 | 130 | | | | S |
| Aromatic Hydrocarbon (C8-C10) | 139 | 2.37 | 31.56 | 137.0 | 5.57 | 70 | 130 | | | | S |
| Aromatic Hydrocarbon (C10-C12) | 404 | 0.395 | 7.891 | 506.4 | -1,290 | 70 | 130 | | | | S |
| Aromatic Hydrocarbon (C12-C13) | 360 | 0.395 | 7.891 | 575.9 | -2,740 | 70 | 130 | | | | S |
| Surr: 1,4-Difluorobenzene | 4.11 | | 1.973 | | 209 | 60 | 140 | | | | S |
| Surr: Bromofluorobenzene | 5.87 | | 1.973 | | 297 | 60 | 140 | | | | S |

**NOTES:**
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.
S - Outlying surrogate recovery attributed to TPH interference.

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Volatile Petroleum Hydrocarbons by NWVPH

| Sample ID: **MB-36598** | SampType: **MBLK** | Units: **mg/Kg** | Prep Date: **5/25/2022** | RunNo: **75809** |
|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **36598** | | Analysis Date: **5/25/2022** | SeqNo: **1555346** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.50 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.50 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.50 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.500 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.00 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 0.500 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C12-C13) | ND | 0.500 | | 0 | 0 | | | | | | |
| Surr: 1,4-Difluorobenzene | 2.24 | | 2.500 | | 89.6 | 60 | 140 | | | | |
| Surr: Bromofluorobenzene | 2.32 | | 2.500 | | 92.6 | 60 | 140 | | | | |

| Sample ID: **LCS-36598** | SampType: **LCS** | Units: **mg/Kg** | Prep Date: **5/25/2022** | RunNo: **75809** |
|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **36598** | | Analysis Date: **5/25/2022** | SeqNo: **1555169** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | 31.3 | 2.50 | 30.00 | 0 | 104 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C6-C8) | 8.23 | 1.50 | 10.00 | 0 | 82.3 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C8-C10) | 11.9 | 2.50 | 10.00 | 0 | 119 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 10.9 | 0.500 | 10.00 | 0 | 109 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C8-C10) | 43.9 | 3.00 | 40.00 | 0 | 110 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 10.6 | 0.500 | 10.00 | 0 | 106 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C13) | 10.8 | 0.500 | 10.00 | 0 | 108 | 70 | 130 | | | | |
| Surr: 1,4-Difluorobenzene | 2.80 | | 2.500 | | 112 | 60 | 140 | | | | |
| Surr: Bromofluorobenzene | 2.50 | | 2.500 | | 99.8 | 60 | 140 | | | | |

| Sample ID: **2205254-001BDUP** | SampType: **DUP** | Units: **mg/Kg-dry** | Prep Date: **5/25/2022** | RunNo: **75809** |
|---|---|---|---|---|
| Client ID: **TP-21-S1-5** | Batch ID: **36598** | | Analysis Date: **5/25/2022** | SeqNo: **1555157** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | ND | 5.22 | | 0 | 0 | | | 0 | | 25 | H |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Volatile Petroleum Hydrocarbons by NWVPH

| Sample ID: **2205254-001BDUP** | SampType: **DUP** | Units: **mg/Kg-dry** | Prep Date: **5/25/2022** | RunNo: **75809** |
|---|---|---|---|---|
| Client ID: **TP-21-S1-5** | Batch ID: **36598** | | Analysis Date: **5/25/2022** | SeqNo: **1555157** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C6-C8) | ND | 3.13 | | 0 | 0 | | | 0 | | 25 | QH |
| Aliphatic Hydrocarbon (C8-C10) | ND | 5.22 | | 0 | 0 | | | 0 | | 25 | H |
| Aliphatic Hydrocarbon (C10-C12) | ND | 1.04 | | 0 | 0 | | | 0 | | 25 | H |
| Aromatic Hydrocarbon (C8-C10) | ND | 6.26 | | 0 | 0 | | | 0 | | 25 | H |
| Aromatic Hydrocarbon (C10-C12) | 1.85 | 1.04 | | 0 | 0 | | | 1.919 | 3.53 | 25 | H |
| Aromatic Hydrocarbon (C12-C13) | 5.37 | 1.04 | | 0 | 0 | | | 5.705 | 6.11 | 25 | H |
| Surr: 1,4-Difluorobenzene | 4.59 | | 5.215 | | 88.0 | 60 | 140 | | 0 | | H |
| Surr: Bromofluorobenzene | 4.48 | | 5.215 | | 86.0 | 60 | 140 | | 0 | | H |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

| Sample ID: **2205254-002BMS** | SampType: **MS** | Units: **mg/Kg-dry** | Prep Date: **5/25/2022** | RunNo: **75809** |
|---|---|---|---|---|
| Client ID: **TP-21-S2-10** | Batch ID: **36598** | | Analysis Date: **5/26/2022** | SeqNo: **1555159** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | 36.0 | 2.88 | 34.57 | 0 | 104 | 70 | 130 | | | | H |
| Aliphatic Hydrocarbon (C6-C8) | 12.5 | 1.73 | 11.52 | 1.473 | 95.4 | 70 | 130 | | | | H |
| Aliphatic Hydrocarbon (C8-C10) | 10.3 | 2.88 | 11.52 | 0 | 89.0 | 70 | 130 | | | | H |
| Aliphatic Hydrocarbon (C10-C12) | 12.3 | 0.576 | 11.52 | 0.5068 | 102 | 70 | 130 | | | | H |
| Aromatic Hydrocarbon (C8-C10) | 52.3 | 3.46 | 46.10 | 2.439 | 108 | 70 | 130 | | | | H |
| Aromatic Hydrocarbon (C10-C12) | 12.3 | 0.576 | 11.52 | 1.558 | 93.0 | 70 | 130 | | | | H |
| Aromatic Hydrocarbon (C12-C13) | 10.6 | 0.576 | 11.52 | 2.089 | 74.1 | 70 | 130 | | | | H |
| Surr: 1,4-Difluorobenzene | 3.14 | | 2.881 | | 109 | 60 | 140 | | | | H |
| Surr: Bromofluorobenzene | 2.64 | | 2.881 | | 91.5 | 60 | 140 | | | | H |

| Sample ID: **LCS-36504** | SampType: **LCS** | Units: **mg/Kg** | Prep Date: **5/18/2022** | RunNo: **75885** |
|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **36504** | | Analysis Date: **5/26/2022** | SeqNo: **1556385** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | 28.1 | 2.50 | 30.00 | 0 | 93.6 | 70 | 130 | | | | |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Volatile Petroleum Hydrocarbons by NWVPH

| Sample ID: **LCS-36504** | SampType: **LCS** | | | Units: **mg/Kg** | | Prep Date: **5/18/2022** | | RunNo: **75885** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **36504** | | | | | Analysis Date: **5/26/2022** | | SeqNo: **1556385** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aliphatic Hydrocarbon (C6-C8) | 8.67 | 1.50 | 10.00 | 0 | 86.7 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C8-C10) | 8.47 | 2.50 | 10.00 | 0 | 84.7 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 10.3 | 0.500 | 10.00 | 0 | 103 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C8-C10) | 41.7 | 3.00 | 40.00 | 0 | 104 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 9.76 | 0.500 | 10.00 | 0 | 97.6 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C13) | 9.79 | 0.500 | 10.00 | 0 | 97.9 | 70 | 130 | | | | |
| Surr: 1,4-Difluorobenzene | 2.48 | | 2.500 | | 99.0 | 60 | 140 | | | | |
| Surr: Bromofluorobenzene | 2.44 | | 2.500 | | 97.8 | 60 | 140 | | | | |

| Sample ID: **MB-36504** | SampType: **MBLK** | | | Units: **mg/Kg** | | Prep Date: **5/18/2022** | | RunNo: **75885** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **36504** | | | | | Analysis Date: **5/26/2022** | | SeqNo: **1556384** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.50 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.50 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.50 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.500 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.00 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 0.500 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C12-C13) | ND | 0.500 | | 0 | 0 | | | | | | |
| Surr: 1,4-Difluorobenzene | 2.30 | | 2.500 | | 92.1 | 60 | 140 | | | | |
| Surr: Bromofluorobenzene | 2.34 | | 2.500 | | 93.7 | 60 | 140 | | | | |

| Sample ID: **2205254-026BDUP** | SampType: **DUP** | | | Units: **mg/Kg-dry** | | Prep Date: **5/18/2022** | | RunNo: **75885** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **TP-55-S2-5** | Batch ID: **36504** | | | | | Analysis Date: **5/27/2022** | | SeqNo: **1556367** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aliphatic Hydrocarbon (C5-C6) | ND | 3.16 | | 0 | 0 | | | 0 | | 25 | H |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.90 | | 0 | 0 | | | 0 | | 25 | H |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Volatile Petroleum Hydrocarbons by NWVPH

| Sample ID: **2205254-026BDUP** | SampType: **DUP** | Units: **mg/Kg-dry** | Prep Date: **5/18/2022** | RunNo: **75885** |
|---|---|---|---|---|
| Client ID: **TP-55-S2-5** | Batch ID: **36504** | | Analysis Date: **5/27/2022** | SeqNo: **1556367** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 3.16 | | 0 | 0 | | | 0 | | 25 | H |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.632 | | 0 | 0 | | | 0 | | 25 | H |
| Aromatic Hydrocarbon (C8-C10) | ND | 3.79 | | 0 | 0 | | | 0 | | 25 | H |
| Aromatic Hydrocarbon (C10-C12) | 1.06 | 0.632 | | 0 | 0 | | | 0.9413 | 12.2 | 25 | H |
| Aromatic Hydrocarbon (C12-C13) | 4.69 | 0.632 | | 0 | 0 | | | 3.004 | 43.8 | 25 | RH |
| Surr: 1,4-Difluorobenzene | 2.76 | | 3.160 | | 87.4 | 60 | 140 | | 0 | | H |
| Surr: Bromofluorobenzene | 2.69 | | 3.160 | | 85.3 | 60 | 140 | | 0 | | H |

| Sample ID: **2205254-027BDUP** | SampType: **DUP** | Units: **mg/Kg-dry** | Prep Date: **5/18/2022** | RunNo: **75885** |
|---|---|---|---|---|
| Client ID: **TP-55-S3-10** | Batch ID: **36504** | | Analysis Date: **5/27/2022** | SeqNo: **1556369** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | ND | 2.07 | | 0 | 0 | | | 0 | | 25 | H |
| Aliphatic Hydrocarbon (C6-C8) | ND | 1.24 | | 0 | 0 | | | 0 | | 25 | H |
| Aliphatic Hydrocarbon (C8-C10) | ND | 2.07 | | 0 | 0 | | | 0 | | 25 | H |
| Aliphatic Hydrocarbon (C10-C12) | ND | 0.414 | | 0 | 0 | | | 0 | | 25 | H |
| Aromatic Hydrocarbon (C8-C10) | ND | 2.48 | | 0 | 0 | | | 0 | | 25 | H |
| Aromatic Hydrocarbon (C10-C12) | ND | 0.414 | | 0 | 0 | | | 0 | | 25 | H |
| Aromatic Hydrocarbon (C12-C13) | ND | 0.414 | | 0 | 0 | | | 0.6167 | 59.5 | 25 | H |
| Surr: 1,4-Difluorobenzene | 1.79 | | 2.069 | | 86.4 | 60 | 140 | | 0 | | H |
| Surr: Bromofluorobenzene | 1.71 | | 2.069 | | 82.6 | 60 | 140 | | 0 | | H |

| Sample ID: **2205254-025BMS** | SampType: **MS** | Units: **mg/Kg-dry** | Prep Date: **5/18/2022** | RunNo: **75885** |
|---|---|---|---|---|
| Client ID: **TP-55-S1-2.5** | Batch ID: **36504** | | Analysis Date: **5/27/2022** | SeqNo: **1556365** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | 32.5 | 2.79 | 33.45 | 0 | 97.0 | 70 | 130 | | | | H |
| Aliphatic Hydrocarbon (C6-C8) | 12.0 | 1.67 | 11.15 | 1.447 | 94.5 | 70 | 130 | | | | H |
| Aliphatic Hydrocarbon (C8-C10) | 9.94 | 2.79 | 11.15 | 0 | 89.1 | 70 | 130 | | | | H |

**Work Order:** 2205254
**CLIENT:** Friedman & Bruya
**Project:** 205113

# QC SUMMARY REPORT

## Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **2205254-025BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **5/18/2022** RunNo: **75885**
Client ID: **TP-55-S1-2.5** Batch ID: **36504** Analysis Date: **5/27/2022** SeqNo: **1556365**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C10-C12) | 11.9 | 0.558 | 11.15 | 3.374 | 76.6 | 70 | 130 | | | | H |
| Aromatic Hydrocarbon (C8-C10) | 51.7 | 3.35 | 44.61 | 5.248 | 104 | 70 | 130 | | | | H |
| Aromatic Hydrocarbon (C10-C12) | 11.7 | 0.558 | 11.15 | 5.459 | 55.7 | 70 | 130 | | | | SH |
| Aromatic Hydrocarbon (C12-C13) | 12.1 | 0.558 | 11.15 | 2.757 | 83.7 | 70 | 130 | | | | H |
| Surr: 1,4-Difluorobenzene | 2.94 | | 2.788 | | 105 | 60 | 140 | | | | H |
| Surr: Bromofluorobenzene | 2.58 | | 2.788 | | 92.6 | 60 | 140 | | | | H |

**NOTES:**
S - Spike recovery indicates a possible matrix effect.

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2205254 |
| Logged by: | Gabrielle Coeuille | Date Received: | 5/12/2022 1:32:00 PM |

## Chain of Custody

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes | ☑ | No | ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | | | |

## Log In

| | | | | | | |
|---|---|---|---|---|---|---|
| 3. | Coolers are present? | Yes | ☑ | No | ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes | ☑ | No | ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes | ☐ | No | ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes | ☑ | No | ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes | ☑ | No | ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes | ☑ | No | ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes | ☑ | No | ☐ | |
| 10. | Are samples properly preserved? | Yes | ☑ | No | ☐ | |
| 11. | Was preservative added to bottles? | Yes | ☐ | No | ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes | ☐ | No | ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes | ☑ | No | ☐ | |
| 14. | Does paperwork match bottle labels? | Yes | ☑ | No | ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes | ☑ | No | ☐ | |
| 16. | Is it clear what analyses were requested? | Yes | ☑ | No | ☐ | |
| 17. | Were all holding times able to be met? | Yes | ☐ | No | ☑ | |

## Special Handling (if applicable)

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes | ☑ | No | ☐ | NA ☐ |

| | | | |
|---|---|---|---|
| Person Notified: | Eric Young, Mike Erdahl | Date: | 5/12/2022 |
| By Whom: | Matt Langston | Via: | ☑ eMail ☑ Phone ☐ Fax ☐ In Person |
| Regarding: | Hold times will not be met for all analysis/samples. | | |
| Client Instructions: | | | |

19. Additional remarks:

Item Information

| Item # | Temp ºC |
|---|---|
| Sample 1 | 3.7 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2205254





Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

| SUBCONTRACTER | |
|---|---|
| Fremont Analytical | |
| PROJECT NAME/NO. | PO # |
| 205113 | C-182 |
| REMARKS | |
| EIM | |

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| | | | | | | ANALYSES REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | EPH | VPH | | | | | | | | | Notes |
| TP-21-S1-5 | | 5/5/2022 | 1425 | soil | 2 | X | X | | | | | | | | | |
| TP-21-S2-10 | | 5/5/2022 | 1440 | soil | 2 | X | X | | | | | | | | | |
| TP-21-S200-10 | | 5/5/2022 | 1445 | soil | 2 | X | X | | | | | | | | | |
| TP-21-S3-15 | | 5/5/2022 | 1510 | soil | 2 | X | X | | | | | | | | | |
| TP-22-S1-5 | | 5/5/2022 | 1017 | soil | 2 | X | X | | | | | | | | | |
| TP-24-S1-2.5 | | 5/5/2022 | 1115 | soil | 2 | X | X | | | | | | | | | |
| TP-24-S100-2.5 | | 5/5/2022 | 1115 | soil | 2 | X | X | | | | | | | | | |
| TP-24-S2-5 | | 5/5/2022 | 1501 | soil | 2 | X | X | | | | | | | | | |
| TP-25S-S1-2.5 | | 5/5/2022 | 1151 | soil | 2 | X | X | | | | | | | | | |
| TP-26-S1-2.5 | | 5/5/2022 | 1332 | soil | 2 | X | X | | | | | | | | | |
| TP-34-S1-2.5 | | 5/3/2022 | 945 | soil | 2 | X | X | | | | | | | | | |
| TP-36-S1-3.5 | | 5/2/2022 | 1623 | soil | 2 | X | X | | | | | | | | | |
| TP-43-S2-7.5 | | 5/3/2022 | 1035 | soil | 2 | X | X | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 5/12/22 | 1130 |
| Received by: | Mana Kraft | Mana Kraft | FAI | 5/12/22 | 13:32 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2205254





Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

| SUBCONTRACTER | |
|---|---|
| Fremont Analytical | |
| PROJECT NAME/NO. | PO # |
| 205113 | C-182 |
| REMARKS | |
| EIM | |

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: EPH | VPH | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-43-S4-14 | | 5/3/2022 | 1050 | soil | 2 | X | X | | | | | | | | | |
| TP-44-S1-5 | | 5/3/2022 | 1625 | soil | 2 | X | X | | | | | | | | | |
| TP-44-S2-10 | | 5/3/2022 | 1650 | soil | 2 | X | X | | | | | | | | | |
| TP-47-S1-5 | | 5/3/2022 | 1250 | soil | 2 | X | X | | | | | | | | | |
| TP-48-S1-5 | | 5/3/2022 | 1430 | soil | 2 | X | X | | | | | | | | | |
| TP-48-S2-10 | | 5/3/2022 | 1450 | soil | 2 | X | X | | | | | | | | | |
| TP-49-S1-2.5 | | 5/3/2022 | 1625 | soil | 2 | X | X | | | | | | | | | |
| TP-49-S2-5 | | 5/3/2022 | 1645 | soil | 2 | X | X | | | | | | | | | |
| TP-49-S3-7.5 | | 5/3/2022 | 1700 | soil | 2 | X | X | | | | | | | | | |
| TP-49-S4-10 | | 5/3/2022 | 1710 | soil | 2 | X | X | | | | | | | | | |
| TP-49-S5-18 | | 5/3/2022 | 1800 | soil | 2 | X | X | | | | | | | | | |
| TP-55-S1-2.5 | | 5/4/2022 | 740 | soil | 2 | X | X | | | | | | | | | |
| TP-55-S2-5 | | 5/4/2022 | 800 | soil | 2 | X | X | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 5/12/22 | 1130 |
| Received by: | | Mana Kraft | FAI | 5-12-22 | 13:32 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2205254

Page # 3 of 3



Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

| SUBCONTRACTER | |
|---|---|
| Fremont Analytical | |
| PROJECT NAME/NO. | PO # |
| 205113 | C-182 |
| REMARKS | |
| EIM | |

TURNAROUND TIME
- ☒ Standard TAT
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

| | | | | | | ANALYSES REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | EPH | VPH | | | | | | | | | Notes |
| TP-55-S3-10 | | 5/4/2022 | 825 | soil | 2 | X | X | | | | | | | | | |
| TP-55-S4-15 | | 5/4/2022 | 850 | soil | 2 | X | X | | | | | | | | | |
| TP-59-S1-5 | | 5/4/2022 | 1015 | soil | 2 | X | X | | | | | | | | | |
| TP-59-S2-10 | | 5/4/2022 | 1045 | soil | 2 | X | X | | | | | | | | | |
| TP-59-S3-15 | | 5/4/2022 | 1115 | soil | 2 | X | X | | | | | | | | | |
| TP-20-S1-5 | | 5/4/2022 | 1625 | soil | 2 | X | X | | | | | | | | | |
| TP-29-S1-5 | | 5/4/2022 | 1700 | soil | 2 | X | X | | | | | | | | | |
| TP-42-S1-2.5 | | 5/4/2022 | 1310 | soil | 2 | X | X | | | | | | | | | |
| TP-42-S2-5 | | 5/4/2022 | 1340 | soil | 2 | X | X | | | | | | | | | |
| TP-51-S1-5 | | 5/4/2022 | 1250 | soil | 2 | X | X | | | | | | | | | |
| TP-51-S2-10 | | 5/4/2022 | 1310 | soil | 2 | X | X | | | | | | | | | |
| TP-51-S100-5 | | 5/4/2022 | 1240 | soil | 2 | X | X | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 5/12/22 | 1130 |
| Received by: | | Mana Kraft | FAI | 5/12/22 | 13:32 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

# Data Usability Summary Report

**Project Name: Kosmos Mill**

**Project Description: Surface water Samples**

**Sample Date(s): 28 June 2022**

**Analytical Laboratory: Friedman & Bruya – Seattle, WA**

**Fremont Analytical – Seattle, WA**

**Validation Performed by: Kirkland Broadwell**

**Validation Reviewed by: Katherine Miller**

**Validation Date: 13 December 2022**

---

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the analytical results for Sample Delivery Group(s) (SDG) listed. This DUSR is organized into the following sections:

1. **Sample Delivery Group Number 206449**
2. **Explanations**
3. **Glossary**
4. **Abbreviations**
5. **Qualifiers**

**References**

This data validation and usability assessment was performed per the guidance and requirements established by the United States Environmental Protection Agency (USEPA) using the following reference materials:

- National Functional Guidelines (NFG) for Inorganic Data Review.
- National Functional Guidelines (NFG) for Organic Data Review.
- The project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section).

Data reported in this sampling event were reported to the laboratory reporting limit (RL)

Sample data were qualified in accordance with the laboratory's standard operating procedures (SOP). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

# 1. Sample Delivery Group Number 206449

## 1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 206499, dated 11 July 2022. The samples were sent to Fremont Analytical for hexavalent chromium analyses (subcontracted SDG number 2206479). Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the COC.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| SW-1-20220628 | N | 206499-01 | 06/28/2022 | WS | A, B, C, D, E, F |
| SW-2-20220628 | N | 206499-02 | 06/28/2022 | WS | A, B, C, D, E, F |
| SW-3-20220628 | N | 206499-03 | 06/28/2022 | WS | A, B, C, D, E, F |
| SW-1-20220628 | N | 2206479-001 | 06/28/2022 | WS | G |
| SW-2-20220628 | N | 2206479-002 | 06/28/2022 | WS | G |
| SW-3-20220628 | N | 2206479-003 | 06/28/2022 | WS | G |

| Method Holding Times | | | |
|---|---|---|---|
| A. | E1631E | Mercury | 28 days preserved; 48 hours unpreserved |
| B. | NWTPH-DX | Total Petroleum Hydrocarbons (TPH) – Diesel | 14 days preserved; 7 days unpreserved |
| C. | NWTPH-GX | Total Petroleum Hydrocarbons (TPH) - Gasoline | 14 days preserved; 7 days unpreserved |
| D. | SW6020 | Metals | 180 days |
| E. | SW8260D | Volatile Organic Compounds (VOCs) | 14 days for liquid, preserved 7 days unpreserved |
| F. | SW8270E | Polycyclic Aromatic Hydrocarbons (PAHs) | 7 days extraction / 40 days analysis |
| G. | SM3500-CR B | Hexavalent Chromium | 24 hours |

## 1.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

## 1.3 REPORTING LIMITS AND SAMPLE DILUTIONS

The RLs for the samples within this SDG met or were below the minimum reporting limit (RL) requirements specified by the project specific QAPP, with the following exceptions:

- The reporting limit for hexavalent chromium was 45 µg/L, rather than 1.2 µg/L as specified in the QAPP.

## 1.4 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified quality control (QC) limits, with the following exceptions:

| Method | Sample ID | Lab ID | Surrogate | Dilution | %R | Qualification |
|---|---|---|---|---|---|---|
| SW8270E | SW-1-20220628 | 206499-01 | 2-Fluorophenol | 1x | 7% | None, target analytes not reported |
| | | | Phenol-d6 | 1x | 8% | |
| | SW-2-20220628 | 206499-02 | 2-Fluorophenol | 1x | 7% | |
| | | | Phenol-d6 | 1x | 7% | |
| | SW-3-20220628 | 206499-03 | 2-Fluorophenol | 1x | 8% | |
| | | | Phenol-d6 | 1x | 8% | |

## 1.5 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses exhibited recoveries and relative percent differences (RPDs) within the specified limits.

## 1.6 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) below were used for matrix spike/matrix spike duplicate (MS/MSD):

| Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 206499-01 | SW-1-20220628 | SW 6020, SM3500-CR B |

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits.

## 1.7 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

## 1.8 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The following sample(s) were used for laboratory duplicate analysis and the RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL):

| Lab Sample Number | Laboratory Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 2206479-001 | SW-1-20220628 | SM3500-CR B |

## 1.9 PRECISION AND ACCURACY

Refer to section E 1.7. Where required by the method, some measurement of analytical accuracy and precision was reported for each method with the site samples.

## 1.10 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable as no data was rejected. No qualifiers were applied to any data in this report.

## 2. Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.2 Surrogate Recovery Compliance
  - Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to sample preparation to determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds.
- E 1.3 Laboratory Control Samples
  - The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the relative percent difference (RPD) found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.
  - Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the percent recovery (%R) of certain spiked compounds. This can be assessed using LCS, blank spike (BS), MS, and/or surrogate recoveries.

# 3. Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg microgram per kilogram
  - µg/L microgram per liter
  - µg/$m^3$ microgram per cubic meter
  - mg/kg milligram per kilogram
  - mg/L milligram per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - WQ Water Quality control matrix
  - WS Surface Water
- Table Footnotes:
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Common Symbols:
  - % percent
  - < less than
  - ≤ less than or equal to
  - > greater than
  - ≥ greater than or equal to
  - = equal
  - °C degrees Celsius
  - ± plus or minus
  - ~ approximately
  - x times (multiplier)

# 4. Abbreviations

| | |
|---|---|
| %D | Percent Difference |
| %R | Percent Recovery |
| %RSD | Percent Relative Standard Deviation |
| %v/v | Percent volume by volume |
| µg/L | micrograms per liter |
| 2s | 2 sigma |
| 4,4-DDT | 4 4-dichlorodiphenyltrichloroethane |
| Abs Diff | Absolute Difference |
| amu | atomic mass unit |
| BPJ | Best Professional Judgement |
| BS | Blank Spike |
| CCB | Continuing Calibration Blank |
| CCV | Continuing Calibration Verification |
| CCVL | Continuing Calibration Verification Low |
| COC | Chain of Custody |
| COM | Combined Isotope Calculation |
| Cr (VI) | Hexavalent Chromium |
| CRI | Collision Reaction Interface |
| DoD | Department of Defense |
| DQO | data quality objective |
| DUSR | Data Usability Summary Report |
| EMPC | Estimated Maximum Possible Concentration |
| FBK | Field Blank Contamination |
| FDP | Field Duplicate |
| GC | Gas Chromatograph |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| GPC | Gel Permeation Chromatography |
| H2 | Hydrogen gas |
| HCl | Hydrochloric Acid |
| ICAL | Initial Calibration |
| ICB | Initial Calibration Blank |
| ICP/MS | Inductively Coupled Plasma/ Mass Spectrometry |
| ICV | Initial Calibration Verification |
| ICVL | Initial Calibration Verification Low |
| IPA | Isopropyl Alcohol |
| LC | Laboratory Control |
| LCS/LCSD | Laboratory Control Sample/Laboratory Control Sample Duplicate |
| MBK | Method Blank Contamination |
| MDC | Minimum Detectable Concentration |
| MDL | Laboratory Method Detection Limit |
| mg/kg | milligrams per kilogram |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | not applicable |
| ND | Non-Detect |
| NFG | National Functional Guidelines |
| $NH_3$ | Ammonia |
| NYSDEC | New York State Department of Environmental Conservation |
| PAH | polycyclic aromatic hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PDS | Post Digestion Spike |
| PEM | Performance Evaluation Mixture |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFBA | Perfluorbutanoic Acid |
| PFD | Perfluorodecalin |
| PFOA | Perfluorooctanoic Acid |
| PFOS | Perfluorooctane sulfonate |
| PFPeA | Perfluoropentanoic Acid |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QSM | Quality Systems Manual |
| $R^2$ | R-squared value |
| Ra-226 | Radium-226 |
| Ra-228 | Radium-228 |
| RESC | Resolution Check Measure |
| RL | Laboratory Reporting Limit |
| RPD | Relative Percent Difference |
| RRF | Relative Response Factors |
| RT | Retention Time |
| SAP | sampling analysis plan |
| SDG | Sample Delivery Group |
| SIM | Selected ion monitoring |
| SOP | Laboratory Standard Operating Procedures |
| SPE | Solid Phase Extraction |
| SVOC | Semi-Volatile Organic Compounds |
| TIC | Tentatively Identified Compound |
| TKN | Total Kjeldahl Nitrogen |
| TPH | Total Petroleum Hydrocarbon |
| TPU | Total Propagated Uncertainty |
| amu | atomic mass unit |
| USEPA | U.S. Environmental Protection Agency |
| VOC | Volatile Organic Compounds |
| WP | Work Plan |

# 5. Qualifiers

The qualifiers below are from the USEPA National Functional Guidelines and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:

  U — The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".

  B — The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers:

  E — The compound was quantitated above the calibration range.

  D — The concentration is based on a diluted sample analysis.

- Validation Qualifiers:

  J — The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  J+ — The result is an estimated quantity, but the result may be biased high.

  J- — The result is an estimated quantity, but the result may be biased low.

  J/UJ — as listed in exception tables J applies to detected data and UJ applies to non-detected data as reported by the laboratory.

  UJ — The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

  NJ — The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.

  R — The sample results were rejected as unusable; the compound may or may not be present in the sample.

  S — Result is suspect. See DUSR for details.

## References


1. Haley & Aldrich, Inc, 2021. Quality Assurance Project Plan. Remedial Investigation Work Plan. Kosmos Mill Oil Cleanup. Site Code: 19499-02. Seattle Washington. December 2021.
2. United States Environmental Protection Agency (USEPA), 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January 2017.
3. USEPA, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January 2017.

FRIEDMAN & BRUYA, INC.

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July 11, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on June 28, 2022 from the Kosmos 0202832-001, F&BI 206499 project. There are 23 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Andrew Nakahara
HNA0711R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 28, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos 0202832-001, F&BI 206499 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 206499 -01 | SW-1 |
| 206499 -02 | SW-2 |
| 206499 -03 | SW-3 |

The samples were sent to Fremont Analytical for hexavalent chromium analysis. The report is enclosed.

The 8270E surrogates 2-fluorophenol and phenol-d6 were outside of control lmits for several samples. The surrogate compounds were not associated with the target compounds, therefore the data were reported.

All quality control requirements were acceptable.

Date of Report: 07/11/22
Date Received: 06/28/22
Project: Kosmos 0202832-001, F&BI 206499
Date Extracted: 07/01/22
Date Analyzed: 07/01/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 51-134) |
|---|---|---|
| SW-1<br>206499-01 | <100 | 85 |
| SW-2<br>206499-02 | <100 | 84 |
| SW-3<br>206499-03 | <100 | 83 |
| Method Blank<br>02-1478 MB | <100 | 87 |

Date of Report: 07/11/22
Date Received: 06/28/22
Project: Kosmos 0202832-001, F&BI 206499
Date Extracted: 06/29/22
Date Analyzed: 06/29/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 41-152) |
|---|---|---|---|
| SW-1<br>206499-01 | <50 | <200 | 107 |
| SW-2<br>206499-02 | <50 | <200 | 96 |
| SW-3<br>206499-03 | <50 | <200 | 73 |
| Method Blank<br>02-1524 MB2 | <50 | <200 | 106 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SW-1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206499-01 |
| Date Analyzed: | 06/30/22 | Data File: | 206499-01.047 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <0.5 |
| Cadmium | <0.25 |
| Copper | <2.0 |
| Lead | <0.5 |
| Nickel | <0.5 |
| Zinc | <2.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SW-2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206499-02 |
| Date Analyzed: | 06/30/22 | Data File: | 206499-02.057 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <0.5 |
| Cadmium | <0.25 |
| Copper | <2.0 |
| Lead | <0.5 |
| Nickel | <0.5 |
| Zinc | <2.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SW-3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206499-03 |
| Date Analyzed: | 06/30/22 | Data File: | 206499-03.058 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <0.5 |
| Cadmium | <0.25 |
| Copper | <2.0 |
| Lead | <0.5 |
| Nickel | <0.5 |
| Zinc | <2.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | I2-451 mb |
| Date Analyzed: | 06/30/22 | Data File: | I2-451 mb.045 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Cadmium | <0.25 |
| Copper | <2.0 |
| Lead | <0.5 |
| Nickel | <0.5 |
| Zinc | <2.5 |

Date of Report: 07/11/22
Date Received: 06/28/22
Project: Kosmos 0202832-001, F&BI 206499
Date Extracted: 06/30/22
Date Analyzed: 07/05/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| SW-1<br>206499-01 | <0.0008 |
| SW-2<br>206499-02 | <0.0008 |
| SW-3<br>206499-03 | <0.0008 |
| Method Blank<br>i2-441 MB | <0.0008 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | SW-1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/29/22 | Lab ID: | 206499-01 |
| Date Analyzed: | 07/06/22 | Data File: | 070611.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 78 | 126 |
| Toluene-d8 | 97 | 84 | 115 |
| 4-Bromofluorobenzene | 97 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benzene | <0.2 |
| Toluene | <0.2 |
| Ethylbenzene | <0.2 |
| m,p-Xylene | <0.4 |
| o-Xylene | <0.2 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | SW-2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/29/22 | Lab ID: | 206499-02 |
| Date Analyzed: | 07/06/22 | Data File: | 070612.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 78 | 126 |
| Toluene-d8 | 98 | 84 | 115 |
| 4-Bromofluorobenzene | 99 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benzene | <0.2 |
| Toluene | <0.2 |
| Ethylbenzene | <0.2 |
| m,p-Xylene | <0.4 |
| o-Xylene | <0.2 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | SW-3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/29/22 | Lab ID: | 206499-03 |
| Date Analyzed: | 07/06/22 | Data File: | 070613.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | RF |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 78 | 126 |
| Toluene-d8 | 92 | 84 | 115 |
| 4-Bromofluorobenzene | 101 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benzene | <0.2 |
| Toluene | <0.2 |
| Ethylbenzene | <0.2 |
| m,p-Xylene | <0.4 |
| o-Xylene | <0.2 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/29/22 | Lab ID: | 02-1496 mb |
| Date Analyzed: | 06/29/22 | Data File: | 062907.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 71 | 132 |
| Toluene-d8 | 96 | 68 | 139 |
| 4-Bromofluorobenzene | 99 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benzene | <0.2 |
| Toluene | <0.2 |
| Ethylbenzene | <0.2 |
| m,p-Xylene | <0.4 |
| o-Xylene | <0.2 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SW-1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/29/22 | Lab ID: | 206499-01 1/0.5 |
| Date Analyzed: | 06/30/22 | Data File: | 063010.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 7 vo | 10 | 60 |
| Phenol-d6 | 8 vo | 10 | 49 |
| Nitrobenzene-d5 | 54 | 15 | 144 |
| 2-Fluorobiphenyl | 67 | 25 | 128 |
| 2,4,6-Tribromophenol | 18 | 10 | 142 |
| Terphenyl-d14 | 82 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Pyrene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SW-2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/29/22 | Lab ID: | 206499-02 1/0.5 |
| Date Analyzed: | 06/30/22 | Data File: | 063011.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 7 vo | 10 | 60 |
| Phenol-d6 | 7 vo | 10 | 49 |
| Nitrobenzene-d5 | 57 | 15 | 144 |
| 2-Fluorobiphenyl | 68 | 25 | 128 |
| 2,4,6-Tribromophenol | 21 | 10 | 142 |
| Terphenyl-d14 | 93 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Pyrene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SW-3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/28/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/29/22 | Lab ID: | 206499-03 1/0.5 |
| Date Analyzed: | 06/30/22 | Data File: | 063012.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 8 vo | 10 | 60 |
| Phenol-d6 | 8 vo | 10 | 49 |
| Nitrobenzene-d5 | 48 | 15 | 144 |
| 2-Fluorobiphenyl | 58 | 25 | 128 |
| 2,4,6-Tribromophenol | 20 | 10 | 142 |
| Terphenyl-d14 | 69 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Pyrene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/29/22 | Lab ID: | 02-1530 mb2 1/0.5 |
| Date Analyzed: | 06/30/22 | Data File: | 063009.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 11 | 10 | 60 |
| Phenol-d6 | 10 | 10 | 49 |
| Nitrobenzene-d5 | 56 | 15 | 144 |
| 2-Fluorobiphenyl | 73 | 25 | 128 |
| 2,4,6-Tribromophenol | 33 | 10 | 142 |
| Terphenyl-d14 | 87 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |
| Pyrene | <0.01 |

Date of Report: 07/11/22
Date Received: 06/28/22
Project: Kosmos 0202832-001, F&BI 206499

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 206504-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 92 | 69-134 |

Date of Report: 07/11/22
Date Received: 06/28/22
Project: Kosmos 0202832-001, F&BI 206499

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 100 | 100 | 63-142 | 0 |

Date of Report: 07/11/22
Date Received: 06/28/22
Project: Kosmos 0202832-001, F&BI 206499

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 206499-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 92 | 96 | 75-125 | 4 |
| Cadmium | ug/L (ppb) | 5 | <1 | 95 | 99 | 75-125 | 4 |
| Copper | ug/L (ppb) | 20 | <5 | 100 | 104 | 75-125 | 4 |
| Lead | ug/L (ppb) | 10 | <1 | 97 | 101 | 75-125 | 4 |
| Nickel | ug/L (ppb) | 20 | <1 | 99 | 101 | 75-125 | 2 |
| Zinc | ug/L (ppb) | 50 | <5 | 96 | 100 | 75-125 | 4 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 93 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 98 | 80-120 |
| Copper | ug/L (ppb) | 20 | 103 | 80-120 |
| Lead | ug/L (ppb) | 10 | 100 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 99 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 98 | 80-120 |

Date of Report: 07/11/22
Date Received: 06/28/22
Project: Kosmos 0202832-001, F&BI 206499

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 206491-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 0.414 | 457 b | 462 b | 71-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 86 | 78-125 |

Date of Report: 07/11/22
Date Received: 06/28/22
Project: Kosmos 0202832-001, F&BI 206499

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 206494-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Benzene | ug/L (ppb) | 10 | <0.35 | 102 | 50-150 |
| Toluene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| Ethylbenzene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| m,p-Xylene | ug/L (ppb) | 20 | <2 | 103 | 50-150 |
| o-Xylene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Benzene | ug/L (ppb) | 10 | 94 | 97 | 70-130 | 3 |
| Toluene | ug/L (ppb) | 10 | 95 | 96 | 70-130 | 1 |
| Ethylbenzene | ug/L (ppb) | 10 | 90 | 93 | 70-130 | 3 |
| m,p-Xylene | ug/L (ppb) | 20 | 92 | 94 | 70-130 | 2 |
| o-Xylene | ug/L (ppb) | 10 | 93 | 95 | 70-130 | 2 |

Date of Report: 07/11/22
Date Received: 06/28/22
Project: Kosmos 0202832-001, F&BI 206499

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Benz(a)anthracene | ug/L (ppb) | 5 | 107 | 110 | 70-130 | 3 |
| Chrysene | ug/L (ppb) | 5 | 103 | 106 | 70-130 | 3 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 108 | 111 | 70-130 | 3 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 104 | 109 | 62-130 | 5 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 106 | 107 | 70-130 | 1 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 104 | 108 | 70-130 | 4 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 100 | 104 | 70-130 | 4 |
| Pyrene | ug/L (ppb) | 5 | 105 | 107 | 70-130 | 2 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

206499

# SAMPLE CHAIN OF CUSTODY 06-28-22

Page # 1 of EDM | VWB | AIB

Report To Meg Goodwin

Company

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

| PROJECT NAME | PO # |
|---|---|
| Kosmos | 0202832-001 |
| REMARKS | INVOICE TO |
| Project specific RLs? - Yes / No | |

TURNAROUND TIME
- X Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021D | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | CPH #s | Total Metals | Total Lead | Chromium VI | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-1 | 01 A-L | 6/28/22 | 1145 | water | 14 | X | X | X | | | | | X | X | X | X | CrVI time: 12 |
| SW-2 | 02 | 6/29/22 | 1230 | ↓ | ↓ | X | X | X | | | | | X | X | X | X | As, Cd, Cu, Pb, Ni, Zn |
| SW-3 | 03 | 6/28/22 | 1300 | ↓ | ↓ | X | X | X | | | | | X | X | X | X | ↓ CrVI time: 12 |
| | | | | | | | | | | | | | | | | | ↓ CrVI time: 1 |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Michael 2. McIntire | Haley and Aldrich | 6/28/22 | 1634 |
| Received by: | Elizabeth Webber-Bruya | F:B | 6/28/22 | 1634 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 206499**
**Work Order Number: 2206479**

July 01, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 3 sample(s) on 6/29/2022 for the analyses presented in the following report.

***Hexavalent Chromium by SM 3500 Cr B***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *07/01/2022*

**CLIENT:** Friedman & Bruya
**Project:** 206499
**Work Order:** 2206479

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2206479-001 | SW-1 | 06/28/2022 11:45 AM | 06/29/2022 8:35 AM |
| 2206479-002 | SW-2 | 06/28/2022 12:30 PM | 06/29/2022 8:35 AM |
| 2206479-003 | SW-3 | 06/28/2022 1:00 PM | 06/29/2022 8:35 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2206479**
Date: **7/1/2022**

**CLIENT:** Friedman & Bruya
**Project:** 206499

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Associated LCS is outside of control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Method Detection Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2206479**
Date Reported: **7/1/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/28/2022 11:45:00 AM
**Project:** 206499
**Lab ID:** 2206479-001
**Matrix:** Water
**Client Sample ID:** **SW-1**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R76499 | | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | 0.0112 | | mg/L | 1 | 06/29/22 11:17:00 |

**Client:** Friedman & Bruya
**Collection Date:** 6/28/2022 12:30:00 PM
**Project:** 206499
**Lab ID:** 2206479-002
**Matrix:** Water
**Client Sample ID:** **SW-2**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R76499 | | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | 0.0112 | | mg/L | 1 | 06/29/22 11:37:00 |

**Client:** Friedman & Bruya
**Collection Date:** 6/28/2022 1:00:00 PM
**Project:** 206499
**Lab ID:** 2206479-003
**Matrix:** Water
**Client Sample ID:** **SW-3**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R76499 | | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | 0.0112 | | mg/L | 1 | 06/29/22 11:41:00 |

**Work Order:** 2206479
**CLIENT:** Friedman & Bruya
**Project:** 206499

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **MB-R76499** | SampType: **MBLK** | | | Units: **mg/L** | | Prep Date: **6/29/2022** | | RunNo: **76499** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R76499** | | | | | Analysis Date: **6/29/2022** | | SeqNo: **1569632** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0450 | | | | | | | | | |

| Sample ID: **LCS-R76499** | SampType: **LCS** | | | Units: **mg/L** | | Prep Date: **6/29/2022** | | RunNo: **76499** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R76499** | | | | | Analysis Date: **6/29/2022** | | SeqNo: **1569633** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.261 | 0.0450 | 0.2500 | 0 | 104 | 82.2 | 115 | | | | |

| Sample ID: **2206479-001ADUP** | SampType: **DUP** | | | Units: **mg/L** | | Prep Date: **6/29/2022** | | RunNo: **76499** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SW-1** | Batch ID: **R76499** | | | | | Analysis Date: **6/29/2022** | | SeqNo: **1569635** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0450 | | | | | | 0 | 0 | 20 | |

| Sample ID: **2206479-001AMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **6/29/2022** | | RunNo: **76499** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SW-1** | Batch ID: **R76499** | | | | | Analysis Date: **6/29/2022** | | SeqNo: **1569636** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.257 | 0.0450 | 0.2500 | 0 | 103 | 59.4 | 125 | | | | |

| Sample ID: **2206479-001AMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **6/29/2022** | | RunNo: **76499** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SW-1** | Batch ID: **R76499** | | | | | Analysis Date: **6/29/2022** | | SeqNo: **1569637** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.276 | 0.0450 | 0.2500 | 0 | 110 | 59.4 | 125 | 0.2566 | 7.14 | 20 | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2206479 |
| Logged by: | Elisabeth Samoray | Date Received: | 6/29/2022 8:35:00 AM |

## Chain of Custody

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes | ☑ | No | ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | | | |

## Log In

| | | | | | | |
|---|---|---|---|---|---|---|
| 3. | Coolers are present? | Yes | ☑ | No | ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes | ☑ | No | ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes | ☐ | No | ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes | ☑ | No | ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes | ☑ | No | ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes | ☑ | No | ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes | ☑ | No | ☐ | |
| 10. | Are samples properly preserved? | Yes | ☑ | No | ☐ | |
| 11. | Was preservative added to bottles? | Yes | ☐ | No | ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes | ☐ | No | ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes | ☑ | No | ☐ | |
| 14. | Does paperwork match bottle labels? | Yes | ☑ | No | ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes | ☑ | No | ☐ | |
| 16. | Is it clear what analyses were requested? | Yes | ☑ | No | ☐ | |
| 17. | Were all holding times able to be met? | Yes | ☑ | No | ☐ | |

## Special Handling (if applicable)

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes | ☐ | No | ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

| Item # | Temp ºC |
|---|---|
| Sample 1 | 2.1 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2206479

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTOR Fremont
PROJECT NAME/NO. 206499
PO # C-247
REMARKS

Page # 1 of 1

TURNAROUND TIME
☒ Standard (1 Week)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions



| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Containers | ANALYSES REQUESTED: TOC | Nitrate | Nitrite | Sulfate | Sulfide | Alkalinity | Ferrous Iron | Chromium VI | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-1 | | 6/28/22 | 1145 | Water | | | | | | | | | X | | | |
| SW-2 | | 6/28/22 | 1230 | ↓ | | | | | | | | | X | | | |
| SW-3 | | 6/28/22 | 1300 | ↓ | | | | | | | | | X | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

FORMS\COC\Subcontract.DOC

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Ann Webber-Bruya | Friedman & Bruya | 6/29/22 | 0800 |
| Received by: | | Lauren Corrie | FAI | 6/29/22 | 0835 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Haley & Aldrich, Inc.
600 South Meyer Ave
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# Data Usability Summary Report

**Project Name: Kosmos Mill**

**Project Description: Grab Groundwater Samples**

**Sample Date(s): 29 June 2022**

**Analytical Laboratory: Friedman & Bruya – Seattle, WA**

**Fremont Analytical – Seattle, WA**

**OnSite Environmental Inc. – Redmond, WA**

**Validation Performed by: Eric Hitchens**

**Validation Reviewed by: Katherine Miller**

**Validation Date: 10 August 2022**

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Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the analytical results for Sample Delivery Group(s) (SDG) listed. This DUSR is organized into the following sections:

1. **Sample Delivery Group Numbers**
2. **Precision and Accuracy [for SDG(s) above]**
3. **Explanations**
4. **Glossary**
5. **Abbreviations**
6. **Qualifiers**

**References**

This data validation and usability assessment was performed per the guidance and requirements established by the United States Environmental Protection Agency (USEPA) using the following reference materials:

- National Functional Guidelines (NFG) for Inorganic Data Review.
- National Functional Guidelines (NFG) for Organic Data Review.
- The project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section).

Data reported in this sampling event were reported to the laboratory reporting limit (RL)

Sample data were qualified in accordance with the laboratory's standard operating procedures (SOP). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

# 1. Sample Delivery Group Numbers

## 1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 206533. The samples were sent to Fremont Analytical for hexavalent chromium and EPH analyses (subcontracted SDG number 06-34). In addition, the samples were sent to Onsite Environmental for VPH analysis (subcontracted SDG number 206533). Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- Custody seals were not used.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| MW-1S-20220629 | N | 206533-01 | 06/29/2022 | WG | A, B, C, D, E, F, G |
| MW-2S-20220629 | N | 206533-02 | 06/29/2022 | WG | A, B, C, D, E, F, G |
| MW-3S-20220629 | N | 206533-03 | 06/29/2022 | WG | A, B, C, D, E, F, G |
| MW-3SD-20220629 | FD | 206533-04 | 06/29/2022 | WG | A, B, C, D, E, F, G |
| MW-4S-20220629 | N | 206533-05 | 06/29/2022 | WG | A, B, C, D, E, F, G |
| MW-1S-20220629 | N | 06-347-01 | 06/29/2022 | WG | H, I |
| MW-2S-20220629 | N | 06-347-02 | 06/29/2022 | WG | H, I |
| MW-3S-20220629 | N | 06-347-03 | 06/29/2022 | WG | H, I |
| MW-3SD-20220629 | FD | 06-347-04 | 06/29/2022 | WG | H, I |
| MW-4S-20220629 | N | 06-347-05 | 06/29/2022 | WG | H, I |
| MW-1S-20220629 | N | 2206506-001 | 06/29/2022 | WG | J, K |
| MW-2S-20220629 | N | 2206506-002 | 06/29/2022 | WG | J, K |
| MW-3S-20220629 | N | 2206506-003 | 06/29/2022 | WG | J, K |
| MW-3SD-20220629 | FD | 2206506-004 | 06/29/2022 | WG | J, K |
| MW-3S-20220629 | N | 2206506-005 | 06/29/2022 | WG | J, K |

| Method Holding Times | | | |
|---|---|---|---|
| A. | E1631E | Mercury | 28 days preserved<br>48 hours unpreserved |
| B. | NWTPH-DX | Total Petroleum Hydrocarbons (TPH) – Diesel | 14 days preserved<br>7 days unpreserved |
| C. | NWTPH-GX | Total Petroleum Hydrocarbons (TPH) – Gasoline | 14 days preserved<br>7 days unpreserved |
| D. | SM2540D | Total Suspended Solids | 7 days |
| E. | SW6020B | Metals | 180 days |
| F. | SW8260D | Volatile Organic Compounds (VOCs) | 14 days preserved<br>7 days unpreserved |
| G. | SW8270E | Polycyclic Aromatic Hydrocarbons (PAHs) | 7 days extraction /<br>40 days analysis |

| Method Holding Times | | | |
|---|---|---|---|
| H. | NWTPH-VPH | Volatile Petroleum Hydrocarbon Fractions | 14 days preserved<br>7 days unpreserved |
| I. | SW8021B | Volatile Organic Compounds (VOCs) | 14 days |
| J. | NWTPH-EPH | Extractable Petroleum Hydrocarbon Fractions | 14 days preserved<br>7 days unpreserved |
| K. | SM3500-CR B | Chromium | 24 hours |

## 1.2 CASE NARRATIVE

The laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since these additional quality control issues were not required for the project's data quality objectives, these quality control issues were not reviewed:

- A 6020B internal standard failed the acceptance criteria for the total and dissolved metals analysis of sample MW-2S. The sample was diluted and reanalyzed with acceptable results. Both data sets were reported. The validator chose results from the first analysis and rejected the alternative.
- Methylene chloride was detected in the 8260D analysis of sample MW-1S, MW-2S, and MW-3SD. The data were flagged as due to laboratory contamination and the detections were flagged "LC" due to do suspected laboratory contamination.

## 1.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol with the following exceptions:

| Method | Matrix | Holding Time | Preservation | Sample ID, Violation, Qualification |
|---|---|---|---|---|
| SM3500-CR B | Water | 24 hours | Cool to ≤ 6 °C | MW-4S-20220629 was analyzed outside of analytical holding time. Qualify "UJ". |

## 1.4 REPORTING LIMITS AND SAMPLE DILUTIONS

The reporting limits for the samples within this SDG met or were below the minimum reporting limit requirements specified by the Project-specific Quality Assurance Project Plan (QAPP) except where diluted due to matrix effects or non-target analytes.

## 1.5 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified quality control (QC) limits, with the following exceptions:

| Method | Sample ID | Lab ID | Surrogate | Dilution | %R | Qualification |
|---|---|---|---|---|---|---|
| 8270E | MW-4S | 206533-04 | 2-Fluorophenol | 1x | 9% | None, target analytes not reported. |
| 8270E | MW-3SD | 206533-05 | 2-Fluorophenol | 1x | 10% | |
| 8270E | MW-3SD | 206533-05 | Phenol-d6 | 1x | 10% | |

## 1.6 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses exhibited recoveries and relative percent differences (RPDs) within the specified limits with the following exceptions:

| Sample Type | Method | Batch ID | Analyte | %R | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|
| LCS/LCSD | NWTPH-EPH | 37022 | TPH (C10-C12) Aliphatic | 65.8%/57.9% | J/UJ | All samples |
| LCS | NWTPH-EPH | 37022 | TPH (C10-C12) Aromatic | 67.6% | J/UJ | |

## 1.7 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) below were used for matrix spike/matrix spike duplicate (MS/MSD):

| Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 206533-01 (Matrix Spike) | MW-1S | 6020B |
| 06-347-03 | MW-3S | NWTPH-VPH, 8021B |
| 2206506-001BMS<br>2206506-001MSD | MW-1S | SM-3500-CR B |

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits with the following exceptions:

| Sample Type | Method | Parent Sample | Analyte | %R | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|
| MS | SM 3500 CR B | MW-1S | Hexavalent Chromium | 0%/0% | UJ | All samples |

## 1.8 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

## 1.9 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The following sample(s) were used for laboratory duplicate analysis and the RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL):

| Lab Sample Number | Laboratory Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 2206506-001DUP | MS-1S | SM 3500 CR B |

The following sample(s) were used for field duplicate analysis. The RPD comparison for detections in either the parent or duplicate sample(s) is shown below. RPDs were all below 35 percent for water (or the absolute difference rule was satisfied if detects were less than 5 times the RL). Any exceptions are noted below and qualified.

| Primary Sample ID | Duplicate Sample ID | Method(s) |
|---|---|---|
| MW-3S-20220629 | MW-3SD-20220629 | E1631E, NWTPH-DX, NWTPH-EPH, NWTPH-GX, NWTPH-VPH, SM 2540D, SM 3500-CR B, EPA 6020B, EPA 8021B, EPA 8260D, EPA 8270E |

**Field Duplicate RPD Calculations:**

| Method | Analyte (µg/L) | Primary Sample ID | Duplicate Sample ID | % RPD | Qualification |
|---|---|---|---|---|---|
| | | MW-3S-20220629 | MW-3SD-20220629 | | |
| NWTPH-VPH | TPH (C10-C12) Aromatic | 140 | ND | NA | J/UJ, Abs. Diff. > RL |
| NWTPH-EPH | TPH (C12-C16) Aromatic | 151 | ND | NA | J/UJ, Abs. Diff. > RL |
| NWTPH-EPH | TPH (C16-C21) Aromatic | 111 | 51.2 | NA | J, Abs. Diff. > RL |
| NWTPH-VPH | TPH (C12-C13) Aromatic | 570 | ND | 168 | J/UJ, RPD>35 |

## 1.10 CALCULATION ACCURACY

Total chromium and hexavalent chromium were not detected.

## 1.11 SUSPECTED LABORATORY CONTAMINATION

Methylene chloride was detected in several samples, however the detections were flagged “LC” due to do suspected laboratory contamination (methylene chloride is frequently used for cleaning equipment in the laboratory).

## 1.12 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable as no data was rejected. A summary of qualifiers applied to this data set is shown in Table E-11.

## 2. Precision and Accuracy [for SDG(s) above]

Refer to section E 1.7. Where required by the method, some measurement of analytical accuracy and precision was reported for each method with the site samples.

## 3. Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- Reporting Basis (Wet/Dry)
  - Soil samples can be reported on either a wet (as received) or dry weight basis. Dry weight data indicate calculations were made to compensate for the moisture content of the soil sample.
  - Percent (%) solids should be appropriately considered when evaluating analytical results for non-aqueous samples. Sediments with high moisture content may or may not be successfully analyzed by routine analytical methods. Samples should have greater than or equal to 30 percent solids to be appropriately quantified.
- E 1.2 Surrogate Recovery Compliance
  - Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to sample preparation to determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds.
- E 1.3 Laboratory Control Samples
  - The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the relative percent difference (%RPD) found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.

- Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the percent recovery (%Rec) of certain spiked compounds. This can be assessed using LCS, BS, MS, and/or surrogate recoveries.

# 4. Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg microgram per kilogram
  - µg/L microgram per liter
  - µg/m3 microgram per cubic meter
  - mg/kg milligram per kilogram
  - mg/L milligram per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - WQ Water Quality control matrix
  - WS Surface Water
- Table Footnotes:
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Common Symbols:
  - % percent
  - < less than
  - ≤ less than or equal to
  - > greater than
  - ≥ greater than or equal to
  - = equal
  - °C degrees Celsius
  - ± plus or minus
  - ~ approximately
  - x times (multiplier)

# 5. Abbreviations

| | |
|---|---|
| %D | Percent Difference |
| %R | Percent Recovery |
| %RSD | Percent Relative Standard Deviation |
| %v/v | Percent volume by volume |
| µg/L | micrograms per liter |
| 2s | 2 sigma |
| 4,4-DDT | 4 4-dichlorodiphenyltrichloroethane |
| Abs Diff | Absolute Difference |
| BPJ | Best Professional Judgement |
| BS | Blank Spike |
| CCB | Continuing Calibration Blank |
| CCV | Continuing Calibration Verification |
| CCVL | Continuing Calibration Verification Low |
| COC | Chain of Custody |
| COM | Combined Isotope Calculation |
| Cr (VI) | Hexavalent Chromium |
| CRI | Collision Reaction Interface |
| DoD | Department of Defense |
| DUSR | Data Usability Summary Report |
| EMPC | Estimated Maximum Possible Concentration |
| FBK | Field Blank Contamination |
| FDP | Field Duplicate |
| GC | Gas Chromatograph |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| GPC | Gel Permeation Chromatography |
| H2 | Hydrogen gas |
| HCl | Hydrochloric Acid |
| ICAL | Initial Calibration |
| ICB | Initial Calibration Blank |
| ICP/MS | Inductively Coupled Plasma/ Mass Spectrometry |
| ICV | Initial Calibration Verification |
| ICVL | Initial Calibration Verification Low |
| IPA | Isopropyl Alcohol |
| LC | Laboratory Control |
| LCS/LCSD | Laboratory Control Sample/Laboratory Control Sample Duplicate |
| MBK | Method Blank Contamination |
| MDC | Minimum Detectable Concentration |
| MDL | Laboratory Method Detection Limit |
| mg/kg | milligrams per kilogram |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | not applicable |
| ND | Non-Detect |
| NFG | National Functional Guidelines |
| $NH_3$ | Ammonia |
| NYSDEC | New York State Department of Environmental Conservation |
| PAH | polycyclic aromatic hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PDS | Post Digestion Spike |
| PEM | Performance Evaluation Mixture |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFBA | Perfluorbutanoic Acid |
| PFD | Perfluorodecalin |
| PFOA | Perfluorooctanoic Acid |
| PFOS | Perfluorooctanoic Acid |
| PFPeA | nonafluorovaleric acid |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QSM | Quality Systems Manual |
| $R^2$ | R-squared value |
| Ra-226 | Radium-226 |
| Ra-228 | Radium-228 |
| RESC | Resolution Check Measure |
| RL | Laboratory Reporting Limit |
| RPD | Relative Percent Difference |
| RRF | Relative Response Factors |
| RT | Retention Time |
| SAP | sampling analysis plan |
| SDG | Sample Delivery Group |
| SIM | Selected ion monitoring |
| SOP | Laboratory Standard Operating Procedures |
| SPE | Solid Phase Extraction |
| SVOC | Semi-Volatile Organic Compounds |
| TIC | Tentatively Identified Compound |
| TKN | Total Kjeldahl Nitrogen |
| TPH | Total Petroleum Hydrocarbon |
| TPU | Total Propagated Uncertainty |
| u | atomic mass unit |
| USEPA | U.S. Environmental Protection Agency |
| VOC | Volatile Organic Compounds |
| WP | Work Plan |

# 6. Qualifiers

The qualifiers below are from the USEPA National Functional Guidelines and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:

  U The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".

  B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers:

  E The compound was quantitated above the calibration range.

  D The concentration is based on a diluted sample analysis.

- Validation Qualifiers:

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  J/UJ as listed in exception tables J applies to detected data and UJ applies to non-detected data as reported by the laboratory.

  UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

  NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.

  R The sample results were rejected as unusable; the compound may or may not be present in the sample.

  S Result is suspect. See DUSR for details.

## References


1. Haley & Aldrich, Inc, 2021. Quality Assurance Project Plan. Remedial Investigation Work Plan. Kosmos Mill Oil Cleanup. Site Code: 19499-02. Seattle Washington. December 2021.
2. United States Environmental Protection Agency (USEPA), 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January 2017.
3. USEPA, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January 2017.

**TABLE E-11**
**SYSTEM PERFORMANCE SUMMARY**
FORMER KOSMOS MILL SITE
MORTON, WASHINGTON

| SDG | Method | Sample ID | Lab ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|
| 2206506 | NWTPH-EPH | MW-3S-20220629 | 2206506-005 | Total Petroleum Hydrocarbons (C12-C16) Aromatic | 151 | 151 J | FDP |
| 2206506 | NWTPH-EPH | MW-3S-20220629 | 2206506-005 | Total Petroleum Hydrocarbons (C16-C21) Aromatic | 111 | 111 J | FDP |
| 2206-347 | NWTPH-VPH | MW-3S-20220629 | 06-347-03 | Total Petroleum Hydrocarbons (C12-C13) Aromatic | 570 | 570 J | FDP |
| 2206506 | NWTPH-EPH | MW-3SD-20220629 | 2206506-004 | Total Petroleum Hydrocarbons (C12-C16) Aromatic | U | UJ | FDP |
| 2206506 | NWTPH-EPH | MW-3SD-20220629 | 2206506-004 | Total Petroleum Hydrocarbons (C16-C21) Aromatic | 51.2 | 51.2 J | FDP |
| 2206-347 | NWTPH-VPH | MW-3SD-20220629 | 06-347-04 | Total Petroleum Hydrocarbons (C12-C13) Aromatic | U | UJ | FDP |
| 2206-347 | NWTPH-VPH | MW-3S-20220629 | 06-347-03 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | 140 | 140 J | FDP, LCS |
| 2206-347 | NWTPH-VPH | MW-3SD-20220629 | 06-347-04 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | U | UJ | FDP, LCS |
| 2206506 | SM3500-CR B | MW-4S-20220629 | 2206506-005 | Chromium VI (Hexavalent) | U | UJ | HTQ, MSD |
| 2206506 | NWTPH-EPH | MW-1S-20220629 | 2206506-001 | Total Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | LCS |
| 2206506 | NWTPH-EPH | MW-1S-20220629 | 2206506-001 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | U | UJ | LCS |
| 2206-347 | NWTPH-VPH | MW-1S-20220629 | 06-347-01 | Total Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | LCS |
| 2206-347 | NWTPH-VPH | MW-1S-20220629 | 06-347-01 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | U | UJ | LCS |
| 2206506 | NWTPH-EPH | MW-2S-20220629 | 2206506-002 | Total Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | LCS |
| 2206506 | NWTPH-EPH | MW-2S-20220629 | 2206506-002 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | U | UJ | LCS |
| 2206-347 | NWTPH-VPH | MW-2S-20220629 | 06-347-02 | Total Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | LCS |
| 2206-347 | NWTPH-VPH | MW-2S-20220629 | 06-347-02 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | U | UJ | LCS |
| 2206506 | NWTPH-EPH | MW-3S-20220629 | 2206506-003 | Total Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | LCS |
| 2206506 | NWTPH-EPH | MW-3S-20220629 | 2206506-005 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | 58.2 | 58.2 J | LCS |
| 2206-347 | NWTPH-VPH | MW-3S-20220629 | 06-347-03 | Total Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | LCS |
| 2206506 | NWTPH-EPH | MW-3SD-20220629 | 2206506-004 | Total Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | LCS |
| 2206506 | NWTPH-EPH | MW-3SD-20220629 | 2206506-004 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | U | UJ | LCS |
| 2206-347 | NWTPH-VPH | MW-3SD-20220629 | 06-347-04 | Total Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | LCS |
| 2206506 | NWTPH-EPH | MW-4S-20220629 | 2206506-005 | Total Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | LCS |
| 2206506 | NWTPH-EPH | MW-4S-20220629 | 2206506-005 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | 68.6 | 68.6 J | LCS |
| 2206-347 | NWTPH-VPH | MW-4S-20220629 | 06-347-05 | Total Petroleum Hydrocarbons (C10-C12) Aliphatic | U | UJ | LCS |
| 2206-347 | NWTPH-VPH | MW-4S-20220629 | 06-347-05 | Total Petroleum Hydrocarbons (C10-C12) Aromatic | 130 | 130 J | LCS |
| 2206506 | SM3500-CR B | MW-1S-20220629 | 2206506-001 | Chromium VI (Hexavalent) | U | UJ | MSD |
| 2206506 | SM3500-CR B | MW-2S-20220629 | 2206506-002 | Chromium VI (Hexavalent) | U | UJ | MSD |
| 2206506 | SM3500-CR B | MW-3S-20220629 | 2206506-003 | Chromium VI (Hexavalent) | U | UJ | MSD |
| 2206506 | SM3500-CR B | MW-3SD-20220629 | 2206506-004 | Chromium VI (Hexavalent) | U | UJ | MSD |
| 206533 | SW8260D | MW-3SD-20220629 | 206533-04 | Methylene chloride (Dichloromethane) | 5.8 | 5.8 LC | LC |
| 206533 | SW8260D | MW-2S-20220629 | 206533-02 | Methylene chloride (Dichloromethane) | 5.2 | 5.2 LC | LC |
| 206533 | SW8260D | MW-1S-20220629 | 206533-01 | Methylene chloride (Dichloromethane) | 8.4 | 8.4 LC | LC |

***Notes***

*FDP = Field duplicate qualifier due to an exceedance of the specified limits.*

*HTQ = Holding time exceedance.*

*LC = Laboratory contamination.*

*LCS = Laboratory control/laboratory control spike duplicate percent recoveries or relative percent difference were outside the specified limits.*

*MSD = Matrix spike/matrix spike duplicate percent recoveries or relative percent difference were outside the specified limits.*

*J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.*

*UJ = The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.*

FRIEDMAN & BRUYA, INC.

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July 19, 2022

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Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on June 29, 2022 from the Kosmos 0202832-001, F&BI 206533 project. There are 43 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
HNA0719R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 29, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos 0202832-001, F&BI 206533 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 206533 -01 | MW-1S |
| 206533 -02 | MW-2S |
| 206533 -03 | MW-3S |
| 206533 -04 | MW-4S |
| 206533 -05 | MW-3SD |

The samples were sent to Fremont Analytical for hexavalent chromium and EPH analyses. In addition, the samples were sent to Onsite Environmental for VPH analysis. The reports are enclosed.

A 6020B internal standard failed the acceptance criteria for the total and dissolved metals analysis of sample MW-2S. The sample was diluted and reanalyzed with acceptable results. Both data sets were reported.

Methylene chloride was detected in the 8260D analysis of sample MW-1S, MW-2S, and MW-3SD. The data were flagged as due to laboratory contamination.

All other quality control requirements were acceptable.

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533
Date Extracted: 07/05/22
Date Analyzed: 07/05/22 and 07/07/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 51-134) |
|---|---|---|
| MW-1S<br>206533-01 | <100 | 82 |
| MW-2S<br>206533-02 | <100 | 81 |
| MW-3S<br>206533-03 | 260 | 103 |
| MW-4S<br>206533-04 | <100 | 92 |
| MW-3SD<br>206533-05 | 260 | 104 |
| Method Blank<br>02-1545 MB | <100 | 76 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533
Date Extracted: 06/30/22
Date Analyzed: 06/30/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 41-152) |
|---|---|---|---|
| MW-1S<br>206533-01 | 1,500 x | 1,700 x | 110 |
| MW-2S<br>206533-02 | 1,500 x | 1,100 x | 110 |
| MW-3S<br>206533-03 1/1.3 | 3,300 x | 1,800 x | 116 |
| MW-4S<br>206533-04 | 1,000 x | 1,000 x | 125 |
| MW-3SD<br>206533-05 | 3,200 x | 1,800 x | 117 |
| Method Blank<br>02-1535 MB | <50 | <250 | 112 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-01 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-01.052 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 3.44 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 1.96 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-02 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-02.070 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 3.64 |
| Barium | 1.76 |
| Cadmium | <1 |
| Chromium | <1 J |
| Copper | <2 J |
| Lead | <1 |
| Nickel | 1.65 J |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 5.95 J |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-02 x10 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-02 x10.082 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | <10 |
| Copper | <20 |
| Nickel | <10 |
| Zinc | <25 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-03 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-03.071 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 1.23 |
| Barium | 3.28 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 2.08 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 4.52 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-04 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-04.072 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 5.37 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 2.19 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3SD | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-05 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-05.073 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 1.26 |
| Barium | 3.22 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 2.16 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 4.84 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | I2-452 mb |
| Date Analyzed: | 06/30/22 | Data File: | I2-452 mb.050 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-01 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-01.063 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 3.58 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | 5.72 |
| Lead | <1 |
| Nickel | 1.73 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 6.05 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-02 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-02.064 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 3.92 |
| Barium | 1.83 |
| Cadmium | <1 |
| Chromium | <1 J |
| Copper | <2 J |
| Lead | <1 |
| Nickel | 1.26 J |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 3.48 J |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-02 x10 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-02 x10.081 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | <10 |
| Copper | <50 |
| Nickel | <10 |
| Zinc | <50 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-03 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-03.065 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 1.02 |
| Barium | 3.61 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 2.27 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 8.81 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-04 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-04.066 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 5.19 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 2.06 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3SD | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-05 |
| Date Analyzed: | 06/30/22 | Data File: | 206533-05.069 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 1.20 |
| Barium | 3.28 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 2.07 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 8.96 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | I2-451 mb |
| Date Analyzed: | 06/30/22 | Data File: | I2-451 mb.045 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | WE |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533
Date Extracted: 07/07/22
Date Analyzed: 07/12/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Dissolved Mercury |
|---|---|
| MW-1S<br>206533-01 | <0.01 |
| MW-2S<br>206533-02 | <0.01 |
| MW-3S<br>206533-03 | <0.01 |
| MW-4S<br>206533-04 | <0.01 |
| MW-3SD<br>206533-05 | <0.01 |
| Method Blank<br>i2-464 MB | <0.01 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533
Date Extracted: 07/07/22
Date Analyzed: 07/12/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| MW-1S<br>206533-01 | <0.01 |
| MW-2S<br>206533-02 | <0.01 |
| MW-3S<br>206533-03 | <0.01 |
| MW-4S<br>206533-04 | <0.01 |
| MW-3SD<br>206533-05 | <0.01 |
| Method Blank<br>i2-464 MB | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-01 |
| Date Analyzed: | 07/05/22 | Data File: | 070520.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 71 | 132 |
| Toluene-d8 | 98 | 68 | 139 |
| 4-Bromofluorobenzene | 101 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | 8.4 ca lc | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-02 |
| Date Analyzed: | 07/05/22 | Data File: | 070521.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 107 | 71 | 132 |
| Toluene-d8 | 93 | 68 | 139 |
| 4-Bromofluorobenzene | 102 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | 5.2 ca lc | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-03 |
| Date Analyzed: | 07/05/22 | Data File: | 070522.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 71 | 132 |
| Toluene-d8 | 96 | 68 | 139 |
| 4-Bromofluorobenzene | 95 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | 1.8 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | 1.6 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | 9.9 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | 5.1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | 1.2 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-04 |
| Date Analyzed: | 07/05/22 | Data File: | 070523.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | 71 | 132 |
| Toluene-d8 | 96 | 68 | 139 |
| 4-Bromofluorobenzene | 100 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3SD | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 206533-05 |
| Date Analyzed: | 07/05/22 | Data File: | 070524.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 71 | 132 |
| Toluene-d8 | 98 | 68 | 139 |
| 4-Bromofluorobenzene | 99 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | 5.8 ca lc | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | 1.4 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | 1.2 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | 8.4 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | 4.3 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | 1.1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/22 | Lab ID: | 02-1498 mb |
| Date Analyzed: | 06/30/22 | Data File: | 063007.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 71 | 132 |
| Toluene-d8 | 94 | 68 | 139 |
| 4-Bromofluorobenzene | 107 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/20 | Lab ID: | 206533-01 |
| Date Analyzed: | 07/01/22 | Data File: | 070109.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 25 | 11 | 65 |
| Phenol-d6 | 17 | 11 | 65 |
| Nitrobenzene-d5 | 97 | 50 | 150 |
| 2-Fluorobiphenyl | 93 | 44 | 108 |
| 2,4,6-Tribromophenol | 97 | 10 | 140 |
| Terphenyl-d14 | 116 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | 0.022 |
| Phenanthrene | 0.020 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/20 | Lab ID: | 206533-02 |
| Date Analyzed: | 07/01/22 | Data File: | 070110.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 16 | 11 | 65 |
| Phenol-d6 | 15 | 11 | 65 |
| Nitrobenzene-d5 | 94 | 50 | 150 |
| 2-Fluorobiphenyl | 89 | 44 | 108 |
| 2,4,6-Tribromophenol | 78 | 10 | 140 |
| Terphenyl-d14 | 107 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | 0.076 |
| Fluorene | 0.087 |
| Phenanthrene | 0.030 |
| Anthracene | 0.033 |
| Fluoranthene | <0.02 |
| Pyrene | 0.028 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/20 | Lab ID: | 206533-03 |
| Date Analyzed: | 07/01/22 | Data File: | 070111.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 27 | 11 | 65 |
| Phenol-d6 | 17 | 11 | 65 |
| Nitrobenzene-d5 | 105 | 50 | 150 |
| 2-Fluorobiphenyl | 101 | 44 | 108 |
| 2,4,6-Tribromophenol | 117 | 10 | 140 |
| Terphenyl-d14 | 109 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | 2.8 |
| 1-Methylnaphthalene | 6.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | 0.88 |
| Fluorene | 2.2 |
| Phenanthrene | 1.4 |
| Anthracene | 0.12 |
| Fluoranthene | 0.033 |
| Pyrene | 0.033 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/20 | Lab ID: | 206533-04 |
| Date Analyzed: | 07/01/22 | Data File: | 070112.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 9 vo | 11 | 65 |
| Phenol-d6 | 11 | 11 | 65 |
| Nitrobenzene-d5 | 105 | 50 | 150 |
| 2-Fluorobiphenyl | 97 | 44 | 108 |
| 2,4,6-Tribromophenol | 39 | 10 | 140 |
| Terphenyl-d14 | 113 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3SD | Client: | Haley & Aldrich, Inc |
| Date Received: | 06/29/22 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/20 | Lab ID: | 206533-05 |
| Date Analyzed: | 07/01/22 | Data File: | 070113.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 10 vo | 11 | 65 |
| Phenol-d6 | 10 vo | 11 | 65 |
| Nitrobenzene-d5 | 84 | 50 | 150 |
| 2-Fluorobiphenyl | 79 | 44 | 108 |
| 2,4,6-Tribromophenol | 65 | 10 | 140 |
| Terphenyl-d14 | 91 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | 2.1 |
| 1-Methylnaphthalene | 4.7 |
| Acenaphthylene | <0.02 |
| Acenaphthene | 0.84 |
| Fluorene | 1.7 |
| Phenanthrene | 1.2 |
| Anthracene | 0.11 |
| Fluoranthene | <0.02 |
| Pyrene | 0.024 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 06/30/20 | Lab ID: | 02-1530 mb3 |
| Date Analyzed: | 07/01/22 | Data File: | 070107.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 25 | 11 | 65 |
| Phenol-d6 | 17 | 11 | 65 |
| Nitrobenzene-d5 | 103 | 50 | 150 |
| 2-Fluorobiphenyl | 102 | 44 | 108 |
| 2,4,6-Tribromophenol | 76 | 10 | 140 |
| Terphenyl-d14 | 123 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533
Date Extracted: 07/05/22
Date Analyzed: 07/06/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| MW-1S<br>206533-01 | <5 |
| MW-2S<br>206533-02 | 14 |
| MW-3S<br>206533-03 | 13 |
| MW-4S<br>206533-04 | <5 |
| MW-3SD<br>206533-05 | 16 |
| Method Blank<br>I2-458 MB | <5 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 207021-02 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 84 | 69-134 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 96 | 112 | 63-142 | 15 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 206533-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 92 | 96 | 75-125 | 4 |
| Barium | ug/L (ppb) | 50 | 3.44 | 90 | 95 | 75-125 | 5 |
| Cadmium | ug/L (ppb) | 5 | <1 | 93 | 99 | 75-125 | 6 |
| Chromium | ug/L (ppb) | 20 | <1 | 92 | 96 | 75-125 | 4 |
| Copper | ug/L (ppb) | 20 | <5 | 90 | 97 | 75-125 | 7 |
| Lead | ug/L (ppb) | 10 | <1 | 87 | 93 | 75-125 | 7 |
| Nickel | ug/L (ppb) | 20 | 1.96 | 92 | 97 | 75-125 | 5 |
| Selenium | ug/L (ppb) | 5 | <1 | 97 | 102 | 75-125 | 5 |
| Silver | ug/L (ppb) | 5 | <1 | 81 | 89 | 75-125 | 9 |
| Zinc | ug/L (ppb) | 50 | <5 | 88 | 92 | 75-125 | 4 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 88 | 80-120 |
| Barium | ug/L (ppb) | 50 | 92 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 94 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 91 | 80-120 |
| Copper | ug/L (ppb) | 20 | 97 | 80-120 |
| Lead | ug/L (ppb) | 10 | 97 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 95 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 93 | 80-120 |
| Silver | ug/L (ppb) | 5 | 87 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 94 | 80-120 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 206499-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 92 | 96 | 75-125 | 4 |
| Barium | ug/L (ppb) | 50 | 1.83 | 96 | 99 | 75-125 | 3 |
| Cadmium | ug/L (ppb) | 5 | <1 | 95 | 99 | 75-125 | 4 |
| Chromium | ug/L (ppb) | 20 | <1 | 97 | 100 | 75-125 | 3 |
| Copper | ug/L (ppb) | 20 | <5 | 100 | 104 | 75-125 | 4 |
| Lead | ug/L (ppb) | 10 | <1 | 97 | 101 | 75-125 | 4 |
| Nickel | ug/L (ppb) | 20 | <1 | 99 | 101 | 75-125 | 2 |
| Selenium | ug/L (ppb) | 5 | <1 | 96 | 101 | 75-125 | 5 |
| Silver | ug/L (ppb) | 5 | <1 | 92 | 97 | 75-125 | 5 |
| Zinc | ug/L (ppb) | 50 | <5 | 96 | 100 | 75-125 | 4 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 93 | 80-120 |
| Barium | ug/L (ppb) | 50 | 100 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 98 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 97 | 80-120 |
| Copper | ug/L (ppb) | 20 | 103 | 80-120 |
| Lead | ug/L (ppb) | 10 | 100 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 99 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 97 | 80-120 |
| Silver | ug/L (ppb) | 5 | 94 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 98 | 80-120 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 207090-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 0.0083 | 64 b | 73 | 71-125 | 13 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 94 | 78-125 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 207090-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 0.0083 | 64 b | 73 | 71-125 | 13 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 94 | 78-125 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 206520-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | <1 | 88 | 50-150 |
| Chloromethane | ug/L (ppb) | 10 | <10 | 104 | 50-150 |
| Vinyl chloride | ug/L (ppb) | 10 | <0.02 | 107 | 16-176 |
| Bromomethane | ug/L (ppb) | 10 | <5 | 89 | 10-193 |
| Chloroethane | ug/L (ppb) | 10 | <1 | 92 | 50-150 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | <1 | 89 | 50-150 |
| Acetone | ug/L (ppb) | 50 | <50 | 94 | 15-179 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| Hexane | ug/L (ppb) | 10 | <5 | 107 | 49-161 |
| Methylene chloride | ug/L (ppb) | 10 | <5 | 90 | 40-143 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | <1 | 97 | 50-150 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 118 | 10-335 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| Chloroform | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | <20 | 97 | 34-168 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | <0.2 | 102 | 50-150 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Carbon tetrachloride | ug/L (ppb) | 10 | <0.5 | 103 | 50-150 |
| Benzene | ug/L (ppb) | 10 | <0.35 | 99 | 50-150 |
| Trichloroethene | ug/L (ppb) | 10 | <0.5 | 100 | 43-133 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| Bromodichloromethane | ug/L (ppb) | 10 | <0.5 | 102 | 50-150 |
| Dibromomethane | ug/L (ppb) | 10 | <1 | 92 | 50-150 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | <10 | 94 | 50-150 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 95 | 48-145 |
| Toluene | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 106 | 37-152 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | <0.5 | 96 | 50-150 |
| 2-Hexanone | ug/L (ppb) | 50 | <10 | 93 | 50-150 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| Tetrachloroethene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| Dibromochloromethane | ug/L (ppb) | 10 | <0.5 | 100 | 33-164 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | <1 | 97 | 50-150 |
| Chlorobenzene | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| Ethylbenzene | ug/L (ppb) | 10 | <1 | 95 | 50-150 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | <1 | 97 | 50-150 |
| m,p-Xylene | ug/L (ppb) | 20 | <2 | 97 | 50-150 |
| o-Xylene | ug/L (ppb) | 10 | <1 | 97 | 50-150 |
| Styrene | ug/L (ppb) | 10 | <1 | 91 | 50-150 |
| Isopropylbenzene | ug/L (ppb) | 10 | <1 | 93 | 50-150 |
| Bromoform | ug/L (ppb) | 10 | <5 | 96 | 23-161 |
| n-Propylbenzene | ug/L (ppb) | 10 | <1 | 95 | 50-150 |
| Bromobenzene | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 89 | 50-150 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | <0.2 | 96 | 10-235 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | <1 | 89 | 33-151 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| tert-Butylbenzene | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 91 | 50-150 |
| sec-Butylbenzene | ug/L (ppb) | 10 | <1 | 97 | 46-139 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | <1 | 96 | 46-140 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | <10 | 102 | 50-150 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | <0.5 | 108 | 42-150 |
| Naphthalene | ug/L (ppb) | 10 | <1 | 88 | 50-150 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 96 | 44-155 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | 80 | 89 | 70-130 | 11 |
| Chloromethane | ug/L (ppb) | 10 | 83 | 85 | 70-130 | 2 |
| Vinyl chloride | ug/L (ppb) | 10 | 92 | 99 | 70-130 | 7 |
| Bromomethane | ug/L (ppb) | 10 | 81 | 90 | 28-182 | 11 |
| Chloroethane | ug/L (ppb) | 10 | 83 | 91 | 70-130 | 9 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | 86 | 94 | 70-130 | 9 |
| Acetone | ug/L (ppb) | 50 | 95 | 100 | 42-155 | 5 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | 96 | 101 | 70-130 | 5 |
| Hexane | ug/L (ppb) | 10 | 92 | 93 | 50-161 | 1 |
| Methylene chloride | ug/L (ppb) | 10 | 109 | 109 | 29-192 | 0 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | 93 | 97 | 70-130 | 4 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | 95 | 99 | 70-130 | 4 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | 92 | 96 | 70-130 | 4 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | 118 | 126 | 70-130 | 7 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | 92 | 100 | 70-130 | 8 |
| Chloroform | ug/L (ppb) | 10 | 90 | 96 | 70-130 | 6 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 87 | 95 | 50-157 | 9 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | 95 | 100 | 70-130 | 5 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | 96 | 101 | 70-130 | 5 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | 90 | 94 | 70-130 | 4 |
| Carbon tetrachloride | ug/L (ppb) | 10 | 97 | 102 | 70-130 | 5 |
| Benzene | ug/L (ppb) | 10 | 93 | 98 | 70-130 | 5 |
| Trichloroethene | ug/L (ppb) | 10 | 91 | 97 | 70-130 | 6 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | 92 | 99 | 70-130 | 7 |
| Bromodichloromethane | ug/L (ppb) | 10 | 96 | 100 | 70-130 | 4 |
| Dibromomethane | ug/L (ppb) | 10 | 87 | 93 | 70-130 | 7 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 91 | 102 | 70-130 | 11 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | 97 | 106 | 70-130 | 9 |
| Toluene | ug/L (ppb) | 10 | 99 | 97 | 70-130 | 2 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | 97 | 92 | 70-130 | 5 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | 93 | 96 | 70-130 | 3 |
| 2-Hexanone | ug/L (ppb) | 50 | 101 | 95 | 69-130 | 6 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | 93 | 89 | 70-130 | 4 |
| Tetrachloroethene | ug/L (ppb) | 10 | 99 | 97 | 70-130 | 2 |
| Dibromochloromethane | ug/L (ppb) | 10 | 89 | 87 | 63-142 | 2 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | 92 | 94 | 70-130 | 2 |
| Chlorobenzene | ug/L (ppb) | 10 | 92 | 95 | 70-130 | 3 |
| Ethylbenzene | ug/L (ppb) | 10 | 95 | 95 | 70-130 | 0 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | 95 | 91 | 70-130 | 4 |
| m,p-Xylene | ug/L (ppb) | 20 | 97 | 97 | 70-130 | 0 |
| o-Xylene | ug/L (ppb) | 10 | 97 | 96 | 70-130 | 1 |
| Styrene | ug/L (ppb) | 10 | 96 | 95 | 70-130 | 1 |
| Isopropylbenzene | ug/L (ppb) | 10 | 92 | 91 | 70-130 | 1 |
| Bromoform | ug/L (ppb) | 10 | 94 | 93 | 50-157 | 1 |
| n-Propylbenzene | ug/L (ppb) | 10 | 96 | 95 | 70-130 | 1 |
| Bromobenzene | ug/L (ppb) | 10 | 97 | 97 | 70-130 | 0 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | 95 | 94 | 52-150 | 1 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | 94 | 94 | 70-130 | 0 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | 86 | 88 | 70-130 | 2 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | 98 | 97 | 70-130 | 1 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | 93 | 93 | 70-130 | 0 |
| tert-Butylbenzene | ug/L (ppb) | 10 | 93 | 94 | 70-130 | 1 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | 98 | 98 | 70-130 | 0 |
| sec-Butylbenzene | ug/L (ppb) | 10 | 98 | 96 | 70-130 | 2 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | 100 | 97 | 70-130 | 3 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | 100 | 99 | 70-130 | 1 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | 98 | 96 | 70-130 | 2 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | 98 | 98 | 70-130 | 0 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | 96 | 93 | 70-130 | 3 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | 95 | 95 | 70-130 | 0 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | 96 | 91 | 70-130 | 5 |
| Naphthalene | ug/L (ppb) | 10 | 105 | 102 | 70-130 | 3 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | 96 | 90 | 69-143 | 6 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 5 | 88 | 93 | 60-97 | 6 |
| 2-Methylnaphthalene | ug/L (ppb) | 5 | 93 | 99 | 63-103 | 6 |
| 1-Methylnaphthalene | ug/L (ppb) | 5 | 92 | 98 | 64-101 | 6 |
| Acenaphthylene | ug/L (ppb) | 5 | 100 | 103 | 70-130 | 3 |
| Acenaphthene | ug/L (ppb) | 5 | 97 | 100 | 66-130 | 3 |
| Fluorene | ug/L (ppb) | 5 | 102 | 106 | 70-130 | 4 |
| Phenanthrene | ug/L (ppb) | 5 | 97 | 94 | 70-130 | 3 |
| Anthracene | ug/L (ppb) | 5 | 103 | 101 | 70-130 | 2 |
| Fluoranthene | ug/L (ppb) | 5 | 106 | 108 | 70-130 | 2 |
| Pyrene | ug/L (ppb) | 5 | 105 | 107 | 70-130 | 2 |
| Benz(a)anthracene | ug/L (ppb) | 5 | 107 | 110 | 70-130 | 3 |
| Chrysene | ug/L (ppb) | 5 | 103 | 106 | 70-130 | 3 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 108 | 111 | 70-130 | 3 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 104 | 109 | 62-130 | 5 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 106 | 107 | 70-130 | 1 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 104 | 108 | 70-130 | 4 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 100 | 104 | 70-130 | 4 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 5 | 112 | 116 | 67-124 | 4 |

Date of Report: 07/19/22
Date Received: 06/29/22
Project: Kosmos 0202832-001, F&BI 206533

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| TSS | mg/L (ppm) | 20 | 90 | 96 | 35-146 | 6 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

206533

# SAMPLE CHAIN OF CUSTODY

06-29-22

Page # 1 of 1

EO4/MW3/A12

Report To Andie Goodwin

Company H&A

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: Cosmos

PO #: 0202832-001

REMARKS: Project specific RLs? - Yes / No

INVOICE TO

**TURNAROUND TIME**
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total/Dis. metals | Cr VI | TCLP | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1S | 01 A-K | 6/29/22 | 1500 | water | 11 | X | X | | | X | X | | X | 8 | X | 8 | As, Ba, Cd, Cr, Cu |
| MW-2S | 02 | | 1410 | | | X | X | | | X | X | | X | X | X | X | Pb, Hg, Ni, Se |
| MW-3S | 03 | | 1150 | | | X | X | | | X | X | | X | X | X | X | Ag, Zn |
| MW-4S | 04 | | 0920 | | | X | X | | | X | X | | X | X | X | X | |
| MW-3SD | 05 | | 1220 | | | X | X | | | X | X | | X | X | X | X | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Nakahara | H&A | 6/29/22 | 1900 |
| Received by: | BISRAT TADESSE | FSI | 6/29/22 | 1904 |
| Relinquished by: | | | | |
| Received by: | | | | |

Samples received at 3 °C

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 11, 2022

Michael Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029

Re: Analytical Data for Project 206533
Laboratory Reference No. 2206-347

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on June 30, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures



This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 11, 2022
Samples Submitted: June 30, 2022
Laboratory Reference: 2206-347
Project: 206533

**Case Narrative**

Samples were collected on June 29, 2022 and received by the laboratory on June 30, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 11, 2022
Samples Submitted: June 30, 2022
Laboratory Reference: 2206-346
Project: 206517

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-15** | | | | | |
| Laboratory ID: | 06-347-01 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *80* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 11, 2022
Samples Submitted: June 30, 2022
Laboratory Reference: 2206-346
Project: 206517

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-25** | | | | | |
| Laboratory ID: | 06-347-02 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *78* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 11, 2022
Samples Submitted: June 30, 2022
Laboratory Reference: 2206-346
Project: 206517

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-35** | | | | | |
| Laboratory ID: | 06-347-03 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **57** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **140** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **570** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **770** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *91* | *65-122* | | | | |



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Date of Report: July 11, 2022
Samples Submitted: June 30, 2022
Laboratory Reference: 2206-346
Project: 206517

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-45** | | | | | |
| Laboratory ID: | 06-347-04 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *75* | *65-122* | | | | |



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Date of Report: July 11, 2022
Samples Submitted: June 30, 2022
Laboratory Reference: 2206-346
Project: 206517

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-35D** | | | | | |
| Laboratory ID: | 06-347-05 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **52** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **130** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **460** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **640** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *73* | *65-122* | | | | |



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Date of Report: July 11, 2022
Samples Submitted: June 30, 2022
Laboratory Reference: 2206-346
Project: 206517

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**
**QUALITY CONTROL**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0706W3 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 7-6-22 | 7-6-22 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 7-6-22 | 7-6-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *82* | *65-122* | | | | |



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Date of Report: July 11, 2022
Samples Submitted: June 30, 2022
Laboratory Reference: 2206-346
Project: 206517

**VOLATILE PETROLEUM HYDROCARBONS/BTEX**
**NWTPH-VPH/EPA 8021B**
**QUALITY CONTROL**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MATRIX SPIKES** | | | | | | | | | | | |
| Laboratory ID: | 06-347-03 | | | | | | | | | | |
| | MS | MSD | MS | MSD | | MS | MSD | | | | |
| Benzene | 43.8 | 41.3 | 50.0 | 50.0 | ND | 88 | 83 | 77-120 | 6 | 14 | |
| Toluene | 48.1 | 46.5 | 50.0 | 50.0 | ND | 96 | 93 | 79-120 | 3 | 14 | |
| Ethylbenzene | 52.5 | 51.5 | 50.0 | 50.0 | ND | 105 | 103 | 78-120 | 2 | 13 | |
| m,p-Xylene | 50.4 | 50.0 | 50.0 | 50.0 | ND | 101 | 100 | 77-120 | 1 | 13 | |
| o-Xylene | 51.7 | 51.4 | 50.0 | 50.0 | ND | 103 | 103 | 79-120 | 1 | 13 | |
| *Surrogate:* | | | | | | | | | | | |
| *Fluorobenzene* | | | | | | *95* | *88* | *65-122* | | | |

| Analyte | Result | Spike Level | Percent Recovery | Recovery Limits | Flags |
|---|---|---|---|---|---|
| **SPIKE BLANK** | | | | | |
| Laboratory ID: | SB0706W1 | | | | |
| | SB | SB | SB | | |
| Benzene | 54.6 | 50.0 | 109 | 81-116 | |
| Toluene | 55.7 | 50.0 | 111 | 82-118 | |
| Ethylbenzene | 57.1 | 50.0 | 114 | 82-118 | |
| m,p-Xylene | 56.8 | 50.0 | 114 | 81-118 | |
| o-Xylene | 55.6 | 50.0 | 111 | 81-116 | |
| *Surrogate:* | | | | | |
| *Fluorobenzene* | | | *89* | *65-122* | |



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OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTOR Onsite 06-347

PROJECT NAME/NO. 206533

PO # C-242

REMARKS



TURNAROUND TIME
☒ Standard (1 Week)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Containers | ANALYSES REQUESTED: VPH | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1S | 1 | 6/29/22 | 1500 | | 2 | X | | | | | | | | | | |
| MW-2S | 2 | | 1410 | | 2 | X | | | | | | | | | | |
| MW-3S | 3 | | 1150 | | 1 | X | | | | | | | | | | |
| MW-4S | 4 | | 0920 | | 2 | X | | | | | | | | | | |
| MW-35D | 5 | ↓ | 1220 | | 2 | X | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Ann Webber-Bruya | Friedman & Bruya | 6/29/22 | 0700 |
| Received by: | | M.VOUN | OSE | 6/30/22 | 1230 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

FORMS\COC\Subcontract.DOC

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 206533**
**Work Order Number: 2206506**

July 15, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 5 sample(s) on 6/30/2022 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***
***Hexavalent Chromium by SM 3500 Cr B***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *07/15/2022*

**CLIENT:** Friedman & Bruya
**Project:** 206533
**Work Order:** 2206506

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2206506-001 | MW-1S | 06/29/2022 3:00 PM | 06/30/2022 8:14 AM |
| 2206506-002 | MW-2S | 06/29/2022 2:10 PM | 06/30/2022 8:14 AM |
| 2206506-003 | MW-3S | 06/29/2022 11:50 AM | 06/30/2022 8:14 AM |
| 2206506-004 | MW-4S | 06/29/2022 9:20 AM | 06/30/2022 8:14 AM |
| 2206506-005 | MW-3SD | 06/29/2022 12:20 PM | 06/30/2022 8:14 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2206506**
Date: **7/15/2022**

**CLIENT:** Friedman & Bruya
**Project:** 206533

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2206506**
Date Reported: **7/15/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/29/2022 3:00:00 PM
**Project:** 206533
**Lab ID:** 2206506-001
**Matrix:** Water
**Client Sample ID: MW-1S**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37022 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.2 | | µg/L | 1 | 7/12/2022 3:11:40 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.6 | * | µg/L | 1 | 7/12/2022 3:11:40 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.6 | | µg/L | 1 | 7/12/2022 3:11:40 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.6 | | µg/L | 1 | 7/12/2022 3:11:40 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.6 | | µg/L | 1 | 7/12/2022 3:11:40 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.2 | | µg/L | 1 | 7/12/2022 9:11:44 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.6 | * | µg/L | 1 | 7/12/2022 9:11:44 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.6 | | µg/L | 1 | 7/12/2022 9:11:44 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.6 | | µg/L | 1 | 7/12/2022 9:11:44 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.6 | | µg/L | 1 | 7/12/2022 9:11:44 PM |
| Surr: 1-Chlorooctadecane | 69.6 | 50 - 150 | | %Rec | 1 | 7/12/2022 3:11:40 PM |
| Surr: o-Terphenyl | 106 | 50 - 150 | | %Rec | 1 | 7/12/2022 9:11:44 PM |

**NOTES:**
* - Associated LCS does not meet acceptance criteria; refer to QC summary.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R76542 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 6/30/2022 10:58:00 AM |

# Analytical Report

Work Order: **2206506**
Date Reported: **7/15/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/29/2022 2:10:00 PM
**Project:** 206533
**Lab ID:** 2206506-002
**Matrix:** Water
**Client Sample ID:** **MW-2S**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37022 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.2 | | µg/L | 1 | 7/12/2022 3:35:35 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.6 | * | µg/L | 1 | 7/12/2022 3:35:35 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.6 | | µg/L | 1 | 7/12/2022 3:35:35 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.6 | | µg/L | 1 | 7/12/2022 3:35:35 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.6 | | µg/L | 1 | 7/12/2022 3:35:35 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.2 | | µg/L | 1 | 7/12/2022 9:35:45 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.6 | * | µg/L | 1 | 7/12/2022 9:35:45 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.6 | | µg/L | 1 | 7/12/2022 9:35:45 PM |
| Aromatic Hydrocarbon (C16-C21) | 47.8 | 39.6 | | µg/L | 1 | 7/12/2022 9:35:45 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.6 | | µg/L | 1 | 7/12/2022 9:35:45 PM |
| Surr: 1-Chlorooctadecane | 84.1 | 50 - 150 | | %Rec | 1 | 7/12/2022 3:35:35 PM |
| Surr: o-Terphenyl | 112 | 50 - 150 | | %Rec | 1 | 7/12/2022 9:35:45 PM |

**NOTES:**
* - Associated LCS does not meet acceptance criteria; refer to QC summary.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R76542 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 6/30/2022 11:19:00 AM |

# Analytical Report

Work Order: **2206506**
Date Reported: **7/15/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/29/2022 11:50:00 AM
**Project:** 206533
**Lab ID:** 2206506-003
**Matrix:** Water
**Client Sample ID:** **MW-3S**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37022 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 78.7 | | µg/L | 1 | 7/12/2022 3:59:23 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.3 | * | µg/L | 1 | 7/12/2022 3:59:23 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.3 | | µg/L | 1 | 7/12/2022 3:59:23 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.3 | | µg/L | 1 | 7/12/2022 3:59:23 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.3 | | µg/L | 1 | 7/12/2022 3:59:23 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 78.7 | | µg/L | 1 | 7/12/2022 9:59:39 PM |
| Aromatic Hydrocarbon (C10-C12) | 58.2 | 39.3 | * | µg/L | 1 | 7/12/2022 9:59:39 PM |
| Aromatic Hydrocarbon (C12-C16) | 151 | 39.3 | | µg/L | 1 | 7/12/2022 9:59:39 PM |
| Aromatic Hydrocarbon (C16-C21) | 111 | 39.3 | | µg/L | 1 | 7/12/2022 9:59:39 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.3 | | µg/L | 1 | 7/12/2022 9:59:39 PM |
| Surr: 1-Chlorooctadecane | 70.6 | 50 - 150 | | %Rec | 1 | 7/12/2022 3:59:23 PM |
| Surr: o-Terphenyl | 104 | 50 - 150 | | %Rec | 1 | 7/12/2022 9:59:39 PM |

**NOTES:**
* - Associated LCS does not meet acceptance criteria; refer to QC summary.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R76542 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 6/30/2022 11:23:00 AM |

# Analytical Report

Work Order: **2206506**
Date Reported: **7/15/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/29/2022 9:20:00 AM
**Project:** 206533
**Lab ID:** 2206506-004
**Matrix:** Water
**Client Sample ID:** **MW-4S**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37022 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 82.8 | | µg/L | 1 | 7/12/2022 4:23:12 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 41.4 | * | µg/L | 1 | 7/12/2022 4:23:12 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 41.4 | | µg/L | 1 | 7/12/2022 4:23:12 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 41.4 | | µg/L | 1 | 7/12/2022 4:23:12 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 41.4 | | µg/L | 1 | 7/12/2022 4:23:12 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 82.8 | | µg/L | 1 | 7/12/2022 10:23:28 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 41.4 | * | µg/L | 1 | 7/12/2022 10:23:28 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 41.4 | | µg/L | 1 | 7/12/2022 10:23:28 PM |
| Aromatic Hydrocarbon (C16-C21) | 51.2 | 41.4 | | µg/L | 1 | 7/12/2022 10:23:28 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 41.4 | | µg/L | 1 | 7/12/2022 10:23:28 PM |
| Surr: 1-Chlorooctadecane | 76.2 | 50 - 150 | | %Rec | 1 | 7/12/2022 4:23:12 PM |
| Surr: o-Terphenyl | 114 | 50 - 150 | | %Rec | 1 | 7/12/2022 10:23:28 PM |

**NOTES:**
* - Associated LCS does not meet acceptance criteria; refer to QC summary.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R76542 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | H | mg/L | 1 | 6/30/2022 11:28:00 AM |

# Analytical Report

Work Order: **2206506**
Date Reported: **7/15/2022**

**Client:** Friedman & Bruya
**Collection Date:** 6/29/2022 12:20:00 PM
**Project:** 206533
**Lab ID:** 2206506-005
**Matrix:** Water
**Client Sample ID:** **MW-3SD**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 37022 | | Analyst: SB |
| Aliphatic Hydrocarbon (C8-C10) | ND | 78.5 | | µg/L | 1 | 7/12/2022 4:47:10 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.2 | * | µg/L | 1 | 7/12/2022 4:47:10 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.2 | | µg/L | 1 | 7/12/2022 4:47:10 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.2 | | µg/L | 1 | 7/12/2022 4:47:10 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.2 | | µg/L | 1 | 7/12/2022 4:47:10 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 78.5 | | µg/L | 1 | 7/12/2022 10:47:26 PM |
| Aromatic Hydrocarbon (C10-C12) | 68.6 | 39.2 | * | µg/L | 1 | 7/12/2022 10:47:26 PM |
| Aromatic Hydrocarbon (C12-C16) | 173 | 39.2 | | µg/L | 1 | 7/12/2022 10:47:26 PM |
| Aromatic Hydrocarbon (C16-C21) | 115 | 39.2 | | µg/L | 1 | 7/12/2022 10:47:26 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.2 | | µg/L | 1 | 7/12/2022 10:47:26 PM |
| Surr: 1-Chlorooctadecane | 70.1 | 50 - 150 | | %Rec | 1 | 7/12/2022 4:47:10 PM |
| Surr: o-Terphenyl | 106 | 50 - 150 | | %Rec | 1 | 7/12/2022 10:47:26 PM |

**NOTES:**
* - Associated LCS does not meet acceptance criteria; refer to QC summary.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R76542 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 6/30/2022 11:34:00 AM |

**Work Order:** 2206506
**CLIENT:** Friedman & Bruya
**Project:** 206533

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **MB-R76542** | SampType: **MBLK** | Units: **mg/L** | Prep Date: **6/30/2022** | RunNo: **76542** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R76542** | | Analysis Date: **6/30/2022** | SeqNo: **1570731** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | ND | 0.0450 | | | | | | | | | |

| Sample ID: **LCS-R76542** | SampType: **LCS** | Units: **mg/L** | Prep Date: **6/30/2022** | RunNo: **76542** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R76542** | | Analysis Date: **6/30/2022** | SeqNo: **1570732** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 0.265 | 0.0450 | 0.2500 | 0 | 106 | 82.2 | 115 | | | | |

| Sample ID: **2206506-001BDUP** | SampType: **DUP** | Units: **mg/L** | Prep Date: **6/30/2022** | RunNo: **76542** |
|---|---|---|---|---|
| Client ID: **MW-1S** | Batch ID: **R76542** | | Analysis Date: **6/30/2022** | SeqNo: **1570734** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | ND | 0.0450 | | | | | | 0 | | 20 | |

| Sample ID: **2206506-001BMS** | SampType: **MS** | Units: **mg/L** | Prep Date: **6/30/2022** | RunNo: **76542** |
|---|---|---|---|---|
| Client ID: **MW-1S** | Batch ID: **R76542** | | Analysis Date: **6/30/2022** | SeqNo: **1570735** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | ND | 0.0450 | 0.2500 | 0 | 0 | 59.4 | 125 | | | | S |

**NOTES:**
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

| Sample ID: **2206506-001BMSD** | SampType: **MSD** | Units: **mg/L** | Prep Date: **6/30/2022** | RunNo: **76542** |
|---|---|---|---|---|
| Client ID: **MW-1S** | Batch ID: **R76542** | | Analysis Date: **6/30/2022** | SeqNo: **1570736** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | ND | 0.0450 | 0.2500 | 0 | 0 | 59.4 | 125 | 0 | | 20 | S |

**NOTES:**
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

**Work Order:** 2206506
**CLIENT:** Friedman & Bruya
**Project:** 206533

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-37022** SampType: **MBLK** Units: **µg/L** Prep Date: **7/5/2022** RunNo: **76867**
Client ID: **MBLKW** Batch ID: **37022** Analysis Date: **7/12/2022** SeqNo: **1578014**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 80.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | | | | * |
| Aliphatic Hydrocarbon (C12-C16) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 40.0 | | 0 | 0 | | | | | | |
| Surr: 1-Chlorooctadecane | 364 | | 400.0 | | 90.9 | 50 | 150 | | | | |

Sample ID: **LCS-37022** SampType: **LCS** Units: **µg/L** Prep Date: **7/5/2022** RunNo: **76867**
Client ID: **LCSW** Batch ID: **37022** Analysis Date: **7/12/2022** SeqNo: **1578015**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 258 | 80.0 | 1,000 | 0 | 25.8 | 23 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 329 | 40.0 | 500.0 | 0 | 65.8 | 70 | 130 | | | | S |
| Aliphatic Hydrocarbon (C12-C16) | 403 | 40.0 | 500.0 | 0 | 80.5 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 408 | 40.0 | 500.0 | 0 | 81.6 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 424 | 40.0 | 500.0 | 0 | 84.7 | 70 | 130 | | | | |
| Surr: 1-Chlorooctadecane | 350 | | 400.0 | | 87.5 | 50 | 150 | | | | |

**NOTES:**
S - Outlying spike recovery observed (low bias). Samples will be qualified with a *.

Sample ID: **LCSD-37022** SampType: **LCSD** Units: **µg/L** Prep Date: **7/5/2022** RunNo: **76867**
Client ID: **LCSW02** Batch ID: **37022** Analysis Date: **7/12/2022** SeqNo: **1578016**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 259 | 80.0 | 1,000 | 0 | 25.9 | 23 | 130 | 258.0 | 0.248 | 20 | |
| Aliphatic Hydrocarbon (C10-C12) | 289 | 40.0 | 500.0 | 0 | 57.9 | 70 | 130 | 328.9 | 12.8 | 20 | S |
| Aliphatic Hydrocarbon (C12-C16) | 431 | 40.0 | 500.0 | 0 | 86.1 | 70 | 130 | 402.6 | 6.72 | 20 | |
| Aliphatic Hydrocarbon (C16-C21) | 415 | 40.0 | 500.0 | 0 | 83.1 | 70 | 130 | 407.8 | 1.84 | 20 | |
| Aliphatic Hydrocarbon (C21-C34) | 441 | 40.0 | 500.0 | 0 | 88.2 | 70 | 130 | 423.6 | 4.05 | 20 | |
| Surr: 1-Chlorooctadecane | 378 | | 400.0 | | 94.5 | 50 | 150 | | 0 | | |

**NOTES:**
S - Outlying spike recovery observed (low bias). Samples will be qualified with a *.

**Work Order:** 2206506
**CLIENT:** Friedman & Bruya
**Project:** 206533

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **2206522-002AMS** | SampType: **MS** | Units: **µg/L** | Prep Date: **7/5/2022** | RunNo: **76867** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **37022** | | Analysis Date: **7/12/2022** | SeqNo: **1578024** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 370 | 85.7 | 1,071 | 0 | 34.6 | 8.66 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 378 | 42.9 | 535.7 | 0 | 70.5 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 473 | 42.9 | 535.7 | 0 | 88.4 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 470 | 42.9 | 535.7 | 0 | 87.7 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 477 | 42.9 | 535.7 | 0 | 89.0 | 70 | 130 | | | | |
| Surr: 1-Chlorooctadecane | 422 | | 428.5 | | 98.4 | 50 | 150 | | | | |

| Sample ID: **MB-37022** | SampType: **MBLK** | Units: **µg/L** | Prep Date: **7/5/2022** | RunNo: **76867** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **37022** | | Analysis Date: **7/12/2022** | SeqNo: **1578029** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 80.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | | | | * |
| Aromatic Hydrocarbon (C12-C16) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 40.0 | | 0 | 0 | | | | | | |
| Surr: o-Terphenyl | 481 | | 400.0 | | 120 | 50 | 150 | | | | |

| Sample ID: **LCS-37022** | SampType: **LCS** | Units: **µg/L** | Prep Date: **7/5/2022** | RunNo: **76867** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **37022** | | Analysis Date: **7/12/2022** | SeqNo: **1578030** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 349 | 80.0 | 1,000 | 0 | 34.9 | 28.4 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 338 | 40.0 | 500.0 | 0 | 67.6 | 70 | 130 | | | | S |
| Aromatic Hydrocarbon (C12-C16) | 402 | 40.0 | 500.0 | 0 | 80.3 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 496 | 40.0 | 500.0 | 0 | 99.2 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 465 | 40.0 | 500.0 | 0 | 93.1 | 70 | 130 | | | | |
| Surr: o-Terphenyl | 452 | | 400.0 | | 113 | 50 | 150 | | | | |

**NOTES:**
S - Outlying spike recovery observed (low bias). Samples will be qualified with a *.

**Work Order:** 2206506
**CLIENT:** Friedman & Bruya
**Project:** 206533

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **LCSD-37022** SampType: **LCSD** Units: **µg/L** Prep Date: **7/5/2022** RunNo: **76867**
Client ID: **LCSW02** Batch ID: **37022** Analysis Date: **7/12/2022** SeqNo: **1578031**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 400 | 80.0 | 1,000 | 0 | 40.0 | 28.4 | 130 | 348.6 | 13.7 | 20 | |
| Aromatic Hydrocarbon (C10-C12) | 380 | 40.0 | 500.0 | 0 | 76.0 | 70 | 130 | 338.1 | 11.7 | 20 | |
| Aromatic Hydrocarbon (C12-C16) | 467 | 40.0 | 500.0 | 0 | 93.4 | 70 | 130 | 401.6 | 15.1 | 20 | |
| Aromatic Hydrocarbon (C16-C21) | 496 | 40.0 | 500.0 | 0 | 99.3 | 70 | 130 | 495.9 | 0.0806 | 20 | |
| Aromatic Hydrocarbon (C21-C34) | 487 | 40.0 | 500.0 | 0 | 97.4 | 70 | 130 | 465.4 | 4.49 | 20 | |
| Surr: o-Terphenyl | 477 | | 400.0 | | 119 | 50 | 150 | | 0 | | |

Sample ID: **2206522-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **7/5/2022** RunNo: **76867**
Client ID: **BATCH** Batch ID: **37022** Analysis Date: **7/12/2022** SeqNo: **1578039**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 493 | 85.7 | 1,071 | 0 | 46.0 | 5 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 455 | 42.9 | 535.7 | 0 | 85.0 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 527 | 42.9 | 535.7 | 24.46 | 93.9 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 533 | 42.9 | 535.7 | 58.47 | 88.5 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 551 | 42.9 | 535.7 | 0 | 103 | 70 | 130 | | | | |
| Surr: o-Terphenyl | 492 | | 428.5 | | 115 | 50 | 150 | | | | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2206506 |
| Logged by: | Clare Griggs | Date Received: | 6/30/2022 8:14:00 AM |

## Chain of Custody

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes | ☑ | No | ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | | | |

## Log In

| | | | | | | |
|---|---|---|---|---|---|---|
| 3. | Coolers are present? | Yes | ☑ | No | ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes | ☑ | No | ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes | ☐ | No | ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes | ☑ | No | ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes | ☑ | No | ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes | ☑ | No | ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes | ☑ | No | ☐ | |
| 10. | Are samples properly preserved? | Yes | ☑ | No | ☐ | |
| 11. | Was preservative added to bottles? | Yes | ☐ | No | ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes | ☐ | No | ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes | ☑ | No | ☐ | |
| 14. | Does paperwork match bottle labels? | Yes | ☑ | No | ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes | ☑ | No | ☐ | |
| 16. | Is it clear what analyses were requested? | Yes | ☑ | No | ☐ | |
| 17. | Were all holding times able to be met? | Yes | ☑ | No | ☐ | |

## Special Handling (if applicable)

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes | ☐ | No | ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

| Item # | Temp ºC |
|---|---|
| Sample | 5.9 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2206506

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTOR Fremont

PROJECT NAME/NO. 206533

PO # C-247

REMARKS *Only 1x1L amber for EPH & Cr VI*

TURNAROUND TIME
- [x] Standard (1 Week)
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Containers | ANALYSES REQUESTED: EPH | ANALYSES REQUESTED: Cr VI | |
|---|---|---|---|---|---|---|---|---|
| MW-1S | | 6/29/22 | 1500 | W | 1 | X | X | 1x1L Amber for both analysis |
| MW-2S | | | 1410 | | 1 | | | |
| MW-3S | | | 1150 | | 1 | | | |
| MW-4S | | | 0920 | | 1 | | | |
| MW-3SD | | | 1220 | | 1 | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Ann Webber-Bruya | Friedman & Bruya | 6/29/22 | 0700 |
| Received by: Justine Pogue | Justine Pogue | FAI | 6/30/22 | 8:14 |
| Relinquished by: | | | | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

FORMS\COC\Subcontract.DOC

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

# Data Usability Summary Report

**Project Name: Kosmos Mill**

**Project Description: Surface Water Samples**

**Sample Date(s): 17 October through 8 November 2022**

**Analytical Laboratory: Friedman & Bruya – Seattle, WA;**

**Fremont Analytical – Seattle, WA;**

**Onsite Environmental – Seattle, WA**

**Validation Performed by: Oscar Cervantes**

**Validation Reviewed by: Katherine Miller**

**Validation Date: 15 December 2022**

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Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the analytical results for Sample Delivery Group(s) (SDG) listed. This DUSR is organized into the following sections:

1. **Sample Delivery Group Numbers**
2. **Explanations**
3. **Glossary**
4. **Abbreviations**
5. **Qualifiers**

**References**

This data validation and usability assessment was performed per the guidance and requirements established by the United States Environmental Protection Agency (USEPA) using the following reference materials:

- National Functional Guidelines (NFG) for Inorganic Data Review.
- National Functional Guidelines (NFG) for Organic Data Review.
- The project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section).

Data reported in this sampling event were reported to the laboratory reporting limit (RL)

Sample data were qualified in accordance with the laboratory's standard operating procedures (SOP). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

# 1. Sample Delivery Group Numbers

## 1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of the following SDGs:

- SDG number 210348 (2210406), dated 28 October 2022.
- SDG number 211083 (2211107), dated 23 November 2022.
- SDG number 211082 (2211108), dated 23 November 2022.
- SDG number 210420 (2210543), dated 30 November 2022.
- SDG number 210408 (2210513), dated 22 November 2022.
- SDG number 210409 (2211095) (2211-050), dated 22 November 2022.
- SDG number 210464 (2211250) (2211-172) dated 30 November 2022.
- SDG number 210248 (2210299), dated 11 November 2022.
- SDG number 210370, dated 29 November 2022.
- SDG number 210371, dated 22 November 2022.
- SDG number 211025, dated 23 November 2022.

The samples were sent to Fremont Analytical for hexavalent chromium analyses (subcontracted SDG numbers 2210406, 2211107, 2211108, 2210543, 2210513, 2211095, 2211-050, 2211250, and 2210299). Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the COC.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| SS-1-0.75 | N | 2210299-001A | 10/17/2022 | SE | A, B |
| SS-2-0.5 | N | 2210299-002A | 10/17/2022 | SE | A, B |
| SS-3-0.5 | N | 2210299-003A | 10/17/2022 | SE | A, B |
| SS-4-1.5 | N | 2210299-006A | 10/17/2022 | SE | A, B |
| SS-5-0.5 | N | 2210299-007A | 10/17/2022 | SE | A, B |
| SS-6-0.5 | N | 2210299-008A | 10/17/2022 | SE | A, B |
| SS-7A-0.5 | N | 2210299-009A | 10/17/2022 | SE | A, B |
| SS-8-0.5 | N | 2210299-010A | 10/17/2022 | SE | A, B |
| SS-9-0.5 | N | 2210299-011A | 10/17/2022 | SE | A, B |
| SS-10-0.5 | N | 2210299-012A | 10/17/2022 | SE | A, B |
| SS-11-0.5 | N | 2210299-013A | 10/17/2022 | SE | A, B |
| SS-12-0.5 | N | 2210299-014A | 10/17/2022 | SE | A, B |
| B12-W | N | 210348-01 | 10/24/2022 | WG | C, D, E, F, G, H, I |
| B12-W | N | 2210406-001A | 10/24/2022 | WG | J |
| B17-W | N | 210408-01 | 10/26/2022 | WG | C, D, E, F, G, H, I |

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| B16-W | N | 210408-02 | 10/26/2022 | WG | C, D, E, F, G, H, I |
| B14-W | N | 210408-03 | 10/26/2022 | WG | C, D, E, F, G, H, I |
| B17-W | N | 2210513-001A | 10/26/2022 | WG | J |
| B17-W | N | 2210513-001B | 10/26/2022 | WG | K |
| B16-W | N | 2210513-002A | 10/26/2022 | WG | J |
| B16-W | N | 2210513-002B | 10/26/2022 | WG | K |
| B14-W | N | 2210513-003A | 10/26/2022 | WG | J |
| B14-W | N | 2210513-003B | 10/26/2022 | WG | K |
| B13-S1-5 | N | 210409-01 | 10/25/2022 | SO | C, D, E, G, H, I |
| B13-S2-10 | N | 210409-02 | 10/25/2022 | SO | C, D, E, G, H, I |
| B13-S4-20 | N | 210409-04 | 10/25/2022 | SO | C, D, E, G, H, I |
| B13-S10-50 | N | 210409-10 | 10/25/2022 | SO | C, D, E, G, H, I |
| B17-S1-5 | N | 210409-11 | 10/25/2022 | SO | C, D, E, G, H, I |
| B17-S3-15 | N | 210409-13 | 10/25/2022 | SO | C, D, E, G, H, I |
| B17-S5-25 | N | 210409-15 | 10/25/2022 | SO | C, D, E, G, H, I |
| B17-S8-40 | N | 210409-18 | 10/25/2022 | SO | C, D, E, G, H, I |
| B17-S1D | FD | 210409-21 | 10/25/2022 | SO | C, D, E, G, H, I |
| B14-S1-5 | N | 210409-22 | 10/26/2022 | SO | C, D, E, G, H, I |
| B14-S2-10 | N | 210409-23 | 10/26/2022 | SO | C, D, E, G, H, I |
| B14-S4-19 | N | 210409-25 | 10/26/2022 | SO | C, D, E, G, H, I |
| B14-S8-40 | N | 210409-29 | 10/26/2022 | SO | C, D, E, G, H, I |
| B16-S1-5 | N | 210409-32 | 10/26/2022 | SO | C, D, E, G, H, I |
| B16-S2-7 | N | 210409-33 | 10/26/2022 | SO | C, D, E, G, H, I |
| B16-S3-15 | N | 210409-34 | 10/26/2022 | SO | C, D, E, G, H, I |
| B16-S5-25 | N | 210409-36 | 10/26/2022 | SO | C, D, E, G, H, I |
| B16-S10-50 | N | 210409-41 | 10/26/2022 | SO | C, D, E, G, H, I |
| B11-S1-5 | N | 210409-42 | 10/26/2022 | SO | C, D, E, G, H, I |
| B11-S1D | FD | 210409-44 | 10/26/2022 | SO | C, D, E, G, H, I |
| B11-S3-15 | N | 210409-45 | 10/26/2022 | SO | C, D, E, G, H, I |
| B11-S7-35 | N | 210409-49 | 10/26/2022 | SO | C, D, E, G, H, I |
| B11-S10-50 | N | 210409-52 | 10/26/2022 | SO | C, D, E, G, H, I |
| B11-S3-15 | N | 2211-050-20 | 10/26/2022 | SO | L, M |
| B11-S1D | FD | 2211095-020A | 10/26/2022 | SO | K |
| B13-S1-5 | N | 2211095-001A | 10/25/2022 | SO | K |
| B11-W-20221026 | N | 210420-01 | 10/26/2022 | WG | C, D, E, F, G, H, I |
| MW3D-S1-5 | N | 2211250-001A | 10/27/2022 | SO | K |
| MW3D-S2-10 | N | 2211250-002A | 10/27/2022 | SO | K |
| MW3D-S4-20 | N | 2211250-003A | 10/27/2022 | SO | K |
| MW2D-S1-5 | N | 2211250-004A | 10/28/2022 | SO | K |
| MW2D-S1-5-DUP | FD | 2211250-005A | 10/28/2022 | SO | K |
| MW2D-S2-10 | N | 2211250-006A | 10/28/2022 | SO | K |
| SW-1-20221103 | N | 211082-01 | 11/03/2022 | WS | C, D, G, I, N |

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| SW-2-20221103 | N | 211082-02 | 11/03/2022 | WS | C, D, G, I, N |
| SW-3-20221103 | N | 211082-03 | 11/03/2022 | WS | C, D, G, I, N |
| SW-1-20221103 | N | 2211108-001A | 11/03/2022 | WS | J |
| SW-2-20221103 | N | 2211108-002A | 11/03/2022 | WS | J |
| SW-3-20221103 | N | 2211108-003A | 11/03/2022 | WS | J |
| MW-1D-20221103 | N | 211083-01 | 11/03/2022 | WG | C, D, E, F, G, H, I |
| MW-1DD-20221103 | FD | 211083-02 | 11/03/2022 | WG | C, D, E, F, G, H, I |
| MW-2D-20221103 | N | 211083-03 | 11/03/2022 | WG | C, D, E, F, G, H, I |
| MW-3D-20221103 | N | 211083-04 | 11/03/2022 | WG | C, D, E, F, G, H, I |
| MW-4D-20221103 | N | 211083-05 | 11/03/2022 | WG | C, D, E, F, G, H, I |
| MW-1D-20221103 | N | 2211107-001A | 11/03/2022 | WG | J |
| MW-1DD-20221103 | FD | 2211107-002A | 11/03/2022 | WG | J |
| MW-2D-20221103 | N | 2211107-003A | 11/03/2022 | WG | J |
| MW-3D-20221103 | N | 2211107-004A | 11/03/2022 | WG | J |
| MW-4D-20221103 | N | 2211107-005A | 11/03/2022 | WG | J |
| B11-W-20221026 | N | 2210543-001B | 10/26/2022 | WG | K |
| B11-W-20221026 | N | 2210543-001A | 10/26/2022 | WG | J |
| MW3D-S1-5 | N | 2211-172-01 | 10/27/2022 | SO | L, M |
| MW3D-S2-10 | N | 2211-172-02 | 10/27/2022 | SO | L, M |
| MW3D-S4-20 | N | 2211-172-03 | 10/27/2022 | SO | L, M |
| MW2D-S1-5 | N | 2211-172-04 | 10/28/2022 | SO | L, M |
| MW2D-S1-5-DUP | FD | 2211-172-05 | 10/28/2022 | SO | L, M |
| MW2D-S2-10 | N | 2211-172-06 | 10/28/2022 | SO | L, M |

| Method Holding Times | | | |
|---|---|---|---|
| A. | SW7196A | Hexavalent Chromium [Colorometric] | 28 days for liquid, preserved; 24 hours for liquid unpreserved |
| B. | SW9060 | Total Organic Carbon (TOC) | 28 days for liquid, preserved |
| C. | E1631E | E1631E | 28 days preserved; 48 hours unpreserved |
| D. | NWTPH-DX | Total Petroleum Hydrocarbons (TPH) Total Diesel | 14 days for liquid, preserved; 7 days for liquid unpreserved, 14 days for solid unpreserved |
| E. | NWTPH-GX | Total Petroleum Hydrocarbons (TPH) Total Diesel | 14 days for liquid, preserved; 7 days for liquid unpreserved, 14 days for solid unpreserved |
| F. | SM2540D | Total Suspended Solids | 7 days |
| G. | SW6020B | Metals | 180 days for liquid, preserved; 180 days for solid unpreserved |
| H. | SW8260D | Volatile Organic Compounds (VOCs) | 14 days for liquid, preserved; 7 days for liquid unpreserved, 14 days for solid, preserved 14 days for solid unpreserved |
| I. | SW8270E | Semivolatile Organic Compounds (SVOCs) | 7 days extraction / 40 days analysis for liquid, unpreserved; 14 days extraction / 40 days analysis for solid, unpreserved |

| Method Holding Times | | | |
|---|---|---|---|
| J. | SM3500-CR B | Chromium By Colorimetry | 24 hours |
| K. | NWEPH | NWEPH | 14 days preserved; 7 days unpreserved |
| L. | NWTPH-VPH | Volatile Petroleum Hydrocarbon Fractions | 14 days preserved; 7 days unpreserved |
| M. | SW8021B | Volatile Organic Compounds (VOCs) | 14 days for solid unpreserved |
| N. | NWTPH-GX/SW8021B | NWTPH-GX/SW8021B | 14 days preserved; 7 days unpreserved |

## 1.1 CASE NARRATIVE

The laboratory report case narratives included the following issues:

- The analyte concentration for arsenic is reported below the lowest calibration standard. The value reported is an estimate for the following samples: SW-1-20221103, SW-2-20221103, and SW-3-20221103.
- The analyte concentration for copper is reported below the lowest calibration standard. The value reported is an estimate for the following samples: MW-1D-20221103, MW-1DD-20221103, MW-2D-20221103.
- Methylene chloride was detected in the 8260D analysis of samples B17-S5-25, SS-11-0.5, SS-9-0.5, B12-S10-50, and B12-S4-20. The data were flagged as due to laboratory contamination and the detections were flagged "LC" due to do suspected laboratory contamination.
- An 8270E internal standard failed the acceptance criteria for sample 210464-02. The affected samples were diluted and reanalyzed. The diluted results were marked non-reportable as the results were similar.
- Selenium was reanalyzed for samples 210409-49 and 210409-52. The reanalysis was marked non-reportable as the results were similar.

## 1.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol with the following exceptions:

| Method | Matrix | Holding Time | Preservation | Sample ID, Violation, Qualification |
|---|---|---|---|---|
| SM-3500-CR B | Water | 24 hours | Cool to ≤ 6 °C | The following samples were analyzed outside the holding time and qualified UJ:<br>SW-1-20221103<br>SW-2-20221103<br>SW-3-20221103<br>B11-W-20221026 |

## 1.3 REPORTING LIMITS AND SAMPLE DILUTIONS

All sample dilutions were reviewed and found to be justified. Dilution of the project samples were required to bring calibration of target analytes within calibration range, matrix interference, foaming at the time of purging, or abundance of non-target analytes.

| Sample ID | Lab ID | Analyte/ Method | Dilution Factor | Issue/Explanation |
|---|---|---|---|---|
| B13-S1-5, B13-S2-10, B13-S4-20, B13-S10-5, B17-S1-5, B17-S3-15, B17-S3-15, B17-S5-25, B17-S8-40, B17-S1D | 210409-1, 2, 4, 10, 11, 13, 15, 18, 21 | 1,1,2,2-Tetrachloroethane, Bromoform, Dichlorodifluoromethane, Hexane, Vinyl Chloride/ 8260D | 0.25x | Result above quantitation range. Results qualified J. |
| MW3D-S1-5, MW3D-S2-10, MW3D-S3-15, MW3D-S4-20, MW3D-S5-25, MW3D-S11-55, MW4D-S1-3, MW4D-S2-10, MW4D-S3-15, MW4D-S5-25 | 210464-1, 2, 3, 4, 5, 11, 13, 14, 15, 17 | 1,3-Dichloropropane/ 8260D | 0.25x | Result above quantitation range. Results qualified J. |
| MW4D-S8-40, MW2D-S1-5, MW2D-S1-5-DUP, MW2D-S2-10, MW2D-23-15, MW2D-S4-20, MW2D-S8-40 | 210464-20, 24, 25, 26, 27, 28, 32 | Vinyl chloride/ 8260D | 0.25x | Result above quantitation range. Results qualified J. |

## 1.4 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified quality control (QC) limits, with the following exceptions:

| Method | Sample ID | Lab ID | Surrogate | Dilution | %R | Qualification |
|---|---|---|---|---|---|---|
| NWEPH | B11-W | 2210543-001 | 1-Chlorooctadecane | 1x | 9.36% | J-/R target compounds* |
| NWEPH | B17-W | 2210513-001 | 1-Chlorooctadecane | 1x | 6.2% | J-/R target compounds* |
| NWEPH | B16-W | 2210513-002 | 1-Chlorooctadecane | 1x | 9.7% | J-/R target compounds* |
| NWEPH | B14-W | 2210513-003 | 1-Chlorooctadecane | 1x | 9.36% | J-/R target compounds* |

| Method | Sample ID | Lab ID | Surrogate | Dilution | %R | Qualification |
|---|---|---|---|---|---|---|
| NWEPH | B14-W | 2210513-003 | o-Terphenyl | 1x | 49.7% | J-/UJ target compounds** |

**Compounds targeted by 1-Chlorooctadecane: all aliphatic compounds*
***Compounds targeted by o-Terphenyl: all aromatic compounds*

## 1.5 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses exhibited recoveries and relative percent differences (RPDs) within the specified limits with the following sections:

| SDG # | Sample Type | Method | Analyte | %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|
| 210420 | LCS/LCSD | 8260D | 2,2-Dichloropropane | 139%/141% | J/None | None, samples are ND |
| 210420 | LCS | 8270E | Naphthalene | 57% | J/UJ | 210420-01 |
| 210420 | LCS | 8270E | 2-Methylnaphthalene | 61% | J/UJ | 210420-01 |
| 210420 | LCS | 8270E | 1-Methylnapthalene | 61% | J/UJ | 210420-01 |
| 210420 | LCS | 8270E | Acenaphthylene | 65% | J/UJ | 210420-01 |
| 210420 | LCS | 8270E | Acenaphthene | 68% | J/UJ | 210420-01 |
| 210420 | LCS | 8270E | Fluorene | 68% | J/UJ | 210420-01 |
| 210408 | LCS/LCSD | 8260D | 2,2-Dichloropropane | 139%/141% | J/None | None, samples are ND |
| 210408 | LCS | 8270E | Naphthalene | 57% | J/UJ | 210408-01, 02, 03 |
| 210408 | LCS | 8270E | 2-Methylnaphthalene | 61% | J/UJ | 210408-01, 02, 03 |
| 210408 | LCS | 8270E | 1-Methylnapthalene | 61% | J/UJ | 210408-01, 02, 03 |
| 210408 | LCS | 8270E | Acenaphthylene | 65% | J/UJ | 210408-01, 02, 03 |
| 210408 | LCS | 8270E | Acenaphthene | 68% | J/UJ | 210408-01, 02, 03 |
| 210408 | LCS | 8270E | Fluorene | 68% | J/UJ | 210408-01, 02, 03 |
| 210409 | LCS | 8260D | All analytes | RPD > 20 | J/None | 210409-01, -11, -15, -32, -34 |
| 210409 | LCS | 8270E | Benzo(b)fluoranthene | 152% | J/None | 210409-01 |
| 210464 | LCS | 8260D | Acetone | 190% | J/None | None, samples are ND |
| 210371 | LCS | 8260D | 2,2-Dichloropropane | 135%/128% | J/None | None, samples are ND |

| SDG # | Sample Type | Method | Analyte | %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|
| 210371 | LCS | 8270E | Naphthalene | 57% | J/UJ | 210371-01, 02 |
| 210371 | LCS | 8270E | 2-Methylnaphthalene | 61% | J/UJ | 210371-01, 02 |
| 210371 | LCS | 8270E | 1-Methylnaphthalene | 61% | J/UJ | 210371-01, 02 |
| 210371 | LCS | 8270E | Acenaphthylene | 65% | J/UJ | 210371-01, 02 |
| 210371 | LCS | 8270E | Acenaphthene | 68% | J/UJ | 210371-01, 02 |
| 210371 | LCS | 8270E | Fluorene | 68% | J/UJ | 210371-01, 02 |

## 1.6 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) below were used for matrix spike/matrix spike duplicate (MS/MSD):

| Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 2211107-001 | MW-1D | SM3500-CR B |
| 211082-01 | SW-1 | 1631E |
| 2210406-001 | B12-W | SM3500-CR B |
| 2210543-001 | B11-W | SM3500-CR B |
| 210408-02 | B16-W | 8260D |
| 2210513-001 | B17-W | NWEPH |
| 210409-01 | B13-S1-5 | NWTPH-Dx, 6020B, 1631E |
| 210409-49 | B11-S7-35 | 6020B, 1631E |
| 210409-04 | B13-S4-20 | 8270E |
| 210464-03 | MW3D-S3-15 | NWTPH-Dx |
| 210464-01 | MW3D-S1-5 | 6020B |
| 210464-15 | MW4D-S3-15 | 8270E |
| 210248-01 | SS-1-0.75 | NWTPH-Dx, 6020B, 1631E, 8270E |
| 2210299-001 | SS-1-0.75 | 7196A |
| 2210299-006 | SS-4-1.5 | 9060 |
| 2210299-014 | SS-12-0.5 | 9060 |
| 210370-01 | B12-S1-5 | NWTPH-Dx |
| 210371-01 | B15-W | 6020B, 1631E |
| 211025-01 | MW1D-S1-5 | NWTPH-Dx |

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits with the following exceptions:

| Sample Type | Method | Parent Sample | Analyte | %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|
| MS/MSD | 6020B | B13-S1-5 | Arsenic | 69%/64% | J-/UJ | All samples in SDG210409 |
| MS/MSD | 6020B | B13-S1-5 | Selenium | 80%/51% RPD = 44 | J-/UJ | All samples in SDG210409 |
| MSD | 6020B | B13-S1-5 | Zinc | 70% | J-/UJ | All samples in SDG210409 |
| MS/MSD | 6020B | B11-S7-35 | Barium | 149%/145% | J+/None | All samples in SDG210409 |
| MS/MSD | 6020B | B11-S7-35 | Chromium | 73%/73% | J-/UJ | All samples in SDG210409 |
| MSD | 6020B | B11-S7-35 | Copper | 74% | J-/UJ | All samples in SDG210409 |
| MS | 6020B | B11-S7-35 | Nickel | 73% | J-/UJ | All samples in SDG210409 |
| MSD | 1631E | B13-S1-5 | Mercury | 152% | J+/None | None, samples are ND |
| MS/MSD | 6020B | MW3D-S1-5 | Barium | 142%/101% RPD = 34 | J+/None | All samples in SDG210464 |
| MS/MSD | 6020B | MW3D-S1-5 | Selenium | 65%/42% RPD = 43 | J-/UJ | All samples in SDG210464 |
| MS/MSD | 8270E | MW3D-S1-5 | Naphthalene | 68%/51% RPD = 29 | J/None | None, samples are ND |
| MS | 6020B | SS-1-0.75 | Selenium | 69%/74% | J-/UJ | All samples in SDG210248 |
| MS/MSD | 9060 | SS-12-0.5 | Total Organic Carbon | 104%/128% | J/None | 2210299-014 |
| MS | 1631E | B15-W | Mercury (Total) | 15%/65% RPD = 125 | J-/UJ | All samples in SDG210371 |

## 1.7 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

| Blank Type | SDG | Analyte Detected in Blank | Concentration (µg/L) | Qualifier | Affected Samples |
|---|---|---|---|---|---|
| Method Blank | 210348 | Phenanthrene | 0.02 | Result U | 210348-01 |
| | 211082 | Benz(a)anthracene | 0.037 | NA | None, samples are ND |
| | 211082 | Chrysene | 0.033 | NA | None, samples are ND |
| | 211082 | Benzo(a)pyrene | 0.03 | NA | None, samples are ND |

| Blank Type | SDG | Analyte Detected in Blank | Concentration (µg/L) | Qualifier | Affected Samples |
|---|---|---|---|---|---|
| | 211082 | Benzo(b)fluoranthene | 0.035 | NA | None, samples are ND |
| | 211082 | Benzo(k)fluoranthene | 0.031 | NA | None, samples are ND |
| | 211082 | Indeno(1,2,3-cd)pyrene | 0.029 | NA | None, samples are ND |
| | 211082 | Dibenz(a,h)anthracene | 0.028 | NA | None, samples are ND |

The analysis of the blank samples for field quality control was free of target compounds.

## 1.8 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The following sample(s) were used for laboratory duplicate analysis and the RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL). Any exceptions are noted below and qualified.

| Lab Sample Number | Laboratory Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 2211107-001ADUP | MW-1D-20221103 | J |
| 2210406-001ADUP | B12-W | J |
| 2210299-001ADUP | SS-1-0.75 | A |
| 2210299-006ADUP | SS-4-1.5 | B |
| 2210299-014ADUP | SS-12-0.5 | B |
| 211082-01 | SW-1-20221103 | E |
| 210408-01 | B17-W | E |

| Lab Sample Number | Laboratory Duplicate Sample Client ID | Method(s)/Analyte | % RPD | Qualification |
|---|---|---|---|---|
| 2210299-014ADUP | SS-12-0.5 | Carbon | 49.4 | J/UJ, RPD > 20% |

The following sample(s) were used for field duplicate analysis. The RPD comparison for detections in either the parent or duplicate sample(s) is shown below. RPDs were all below 35 percent for water (or the absolute difference rule was satisfied if detects were less than 5 times the RL). Any exceptions are noted below and qualified.

| Primary Sample ID | Duplicate Sample ID | Method(s) |
|---|---|---|
| MW-1D-20221103 | MW-1DD-20221103 | D, E, J |
| B17-S1-5 | B17-S1D | C, D, E, G, H, I |
| B11-S1-5 | B11-S1D | C, D, E, G, H, I |
| MW2D-S1-5 | MW2D-S1-5-DUP | C, D, E, G, H, I |

**Field Duplicate RPD Calculations:**

| Method(s): USEPA 8260D | | | | |
|---|---|---|---|---|
| Analyte (µg/L) | Primary Sample ID | Duplicate Sample ID | % RPD | Qualification |
| | B17-S1-5 | B17-S1D | | |
| Toluene | 0.0036 | 0.001 U | NA | J/UJ, Abs Diff > RL |
| o-Xylene | 0.0021 | 0.001 U | NA | J/UJ, Abs Diff > RL |

## 1.9 PRECISION AND ACCURACY

Refer to section E 1.7. Where required by the method, some measurement of analytical accuracy and precision was reported for each method with the site samples.

## 1.10 SUSPECTED LABORATORY CONTAMINATION

Methylene chloride was detected in several samples, however the detections were flagged "LC" due to do suspected laboratory contamination (methylene chloride is frequently used for cleaning equipment in the laboratory).

## 1.11 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable as no data was rejected except for rejected data noted below. A summary of qualifiers applied to this data set is shown in Table E-12.

## 2. Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.2 Surrogate Recovery Compliance
  - Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to sample preparation to determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds.
- E 1.3 Laboratory Control Samples
  - The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The relative percent difference (RPD) or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the RPD found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.
  - Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the percent recovery (%R) of certain spiked compounds. This can be assessed using LCS, blank spike (BS), MS, and/or surrogate recoveries.

# 3. Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg microgram per kilogram
  - µg/L microgram per liter
  - µg/$m^3$ microgram per cubic meter
  - mg/kg milligram per kilogram
  - mg/L milligram per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - WQ Water Quality control matrix
  - WS Surface Water
- Table Footnotes:
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Common Symbols:
  - % percent
  - < less than
  - ≤ less than or equal to
  - > greater than
  - ≥ greater than or equal to
  - = equal
  - °C degrees Celsius
  - ± plus or minus
  - ~ approximately
  - x times (multiplier)

# 4. Abbreviations

| | |
|---|---|
| %D | Percent Difference |
| %R | Percent Recovery |
| %RSD | Percent Relative Standard Deviation |
| %v/v | Percent volume by volume |
| µg/L | micrograms per liter |
| 2s | 2 sigma |
| 4,4-DDT | 4 4-dichlorodiphenyltrichloroethane |
| Abs Diff | Absolute Difference |
| amu | atomic mass unit |
| BPJ | Best Professional Judgement |
| BS | Blank Spike |
| CCB | Continuing Calibration Blank |
| CCV | Continuing Calibration Verification |
| CCVL | Continuing Calibration Verification Low |
| COC | Chain of Custody |
| COM | Combined Isotope Calculation |
| Cr (VI) | Hexavalent Chromium |
| CRI | Collision Reaction Interface |
| DoD | Department of Defense |
| DQO | data quality objective |
| DUSR | Data Usability Summary Report |
| EMPC | Estimated Maximum Possible Concentration |
| FBK | Field Blank Contamination |
| FDP | Field Duplicate |
| GC | Gas Chromatograph |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| GPC | Gel Permeation Chromatography |
| H2 | Hydrogen gas |
| HCl | Hydrochloric Acid |
| ICAL | Initial Calibration |
| ICB | Initial Calibration Blank |
| ICP/MS | Inductively Coupled Plasma/ Mass Spectrometry |
| ICV | Initial Calibration Verification |
| ICVL | Initial Calibration Verification Low |
| IPA | Isopropyl Alcohol |
| LC | Laboratory Control |
| LCS/LCSD | Laboratory Control Sample/Laboratory Control Sample Duplicate |
| MBK | Method Blank Contamination |
| MDC | Minimum Detectable Concentration |
| MDL | Laboratory Method Detection Limit |
| mg/kg | milligrams per kilogram |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | not applicable |
| ND | Non-Detect |
| NFG | National Functional Guidelines |
| $NH_3$ | Ammonia |
| NYSDEC | New York State Department of Environmental Conservation |
| PAH | polycyclic aromatic hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PDS | Post Digestion Spike |
| PEM | Performance Evaluation Mixture |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFBA | Perfluorbutanoic Acid |
| PFD | Perfluorodecalin |
| PFOA | Perfluorooctanoic Acid |
| PFOS | Perfluorooctane sulfonate |
| PFPeA | Perfluoropentanoic Acid |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QSM | Quality Systems Manual |
| $R^2$ | R-squared value |
| Ra-226 | Radium-226 |
| Ra-228 | Radium-228 |
| RESC | Resolution Check Measure |
| RL | Laboratory Reporting Limit |
| RPD | Relative Percent Difference |
| RRF | Relative Response Factors |
| RT | Retention Time |
| SAP | sampling analysis plan |
| SDG | Sample Delivery Group |
| SIM | Selected ion monitoring |
| SOP | Laboratory Standard Operating Procedures |
| SPE | Solid Phase Extraction |
| SVOC | Semi-Volatile Organic Compounds |
| TIC | Tentatively Identified Compound |
| TKN | Total Kjeldahl Nitrogen |
| TPH | Total Petroleum Hydrocarbon |
| TPU | Total Propagated Uncertainty |
| amu | atomic mass unit |
| USEPA | U.S. Environmental Protection Agency |
| VOC | Volatile Organic Compounds |
| WP | Work Plan |

# 5. Qualifiers

The qualifiers below are from the USEPA National Functional Guidelines and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:

  U The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".

  B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers:

  E The compound was quantitated above the calibration range.

  D The concentration is based on a diluted sample analysis.

- Validation Qualifiers:

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  J/UJ as listed in exception tables J applies to detected data and UJ applies to non-detected data as reported by the laboratory.

  UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

  NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.

  R The sample results were rejected as unusable; the compound may or may not be present in the sample.

  S Result is suspect. See DUSR for details.

## References


1. Haley & Aldrich, Inc, 2021. Quality Assurance Project Plan. Remedial Investigation Work Plan. Kosmos Mill Oil Cleanup. Site Code: 19499-02. Seattle Washington. December 2021.
2. United States Environmental Protection Agency (USEPA), 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January 2017.
3. USEPA, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January 2017.

**TABLE E-12**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Fraction | Reportable Result | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| 210409 | SW8260D | NA | B13-S1-5 | 210409-01 | 1,1,2,2-Tetrachloroethane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S1-5 | 210409-01 | Bromoform | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S1-5 | 210409-01 | Dichlorodifluoromethane (CFC-12) | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S1-5 | 210409-01 | Hexane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S1-5 | 210409-01 | Vinyl chloride | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S10-50 | 210409-10 | 1,1,2,2-Tetrachloroethane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S10-50 | 210409-10 | Bromoform | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S10-50 | 210409-10 | Dichlorodifluoromethane (CFC-12) | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S10-50 | 210409-10 | Hexane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S10-50 | 210409-10 | Vinyl chloride | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S2-10 | 210409-02 | 1,1,2,2-Tetrachloroethane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S2-10 | 210409-02 | Bromoform | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S2-10 | 210409-02 | Dichlorodifluoromethane (CFC-12) | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S2-10 | 210409-02 | Hexane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S2-10 | 210409-02 | Vinyl chloride | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S4-20 | 210409-04 | 1,1,2,2-Tetrachloroethane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S4-20 | 210409-04 | Bromoform | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S4-20 | 210409-04 | Dichlorodifluoromethane (CFC-12) | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S4-20 | 210409-04 | Hexane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B13-S4-20 | 210409-04 | Vinyl chloride | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1-5 | 210409-11 | 1,1,2,2-Tetrachloroethane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1-5 | 210409-11 | Bromoform | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1-5 | 210409-11 | Dichlorodifluoromethane (CFC-12) | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1-5 | 210409-11 | Hexane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1-5 | 210409-11 | Vinyl chloride | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1D | 210409-21 | 1,1,2,2-Tetrachloroethane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1D | 210409-21 | Bromoform | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1D | 210409-21 | Dichlorodifluoromethane (CFC-12) | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1D | 210409-21 | Hexane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1D | 210409-21 | Vinyl chloride | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S3-15 | 210409-13 | 1,1,2,2-Tetrachloroethane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S3-15 | 210409-13 | Bromoform | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S3-15 | 210409-13 | Dichlorodifluoromethane (CFC-12) | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S3-15 | 210409-13 | Hexane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S3-15 | 210409-13 | Vinyl chloride | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S5-25 | 210409-15 | 1,1,2,2-Tetrachloroethane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S5-25 | 210409-15 | Bromoform | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S5-25 | 210409-15 | Dichlorodifluoromethane (CFC-12) | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S5-25 | 210409-15 | Hexane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S5-25 | 210409-15 | Vinyl chloride | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S8-40 | 210409-18 | 1,1,2,2-Tetrachloroethane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S8-40 | 210409-18 | Bromoform | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S8-40 | 210409-18 | Dichlorodifluoromethane (CFC-12) | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S8-40 | 210409-18 | Hexane | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S8-40 | 210409-18 | Vinyl chloride | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW2D-S1-5 | 210464-24 | Vinyl chloride | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW2D-S1-5-DUP | 210464-25 | Vinyl chloride | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW2D-S2-10 | 210464-26 | Vinyl chloride | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW2D-S3-15 | 210464-27 | Vinyl chloride | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW2D-S4-20 | 210464-28 | Vinyl chloride | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW2D-S8-40 | 210464-32 | Vinyl chloride | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW3D-S1-5 | 210464-01 | 1,3-Dichloropropane | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW3D-S11-55 | 210464-11 | 1,3-Dichloropropane | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW3D-S2-10 | 210464-02 | 1,3-Dichloropropane | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW3D-S3-15 | 210464-03 | 1,3-Dichloropropane | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW3D-S4-20 | 210464-04 | 1,3-Dichloropropane | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW3D-S5-25 | 210464-05 | 1,3-Dichloropropane | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW4D-S1-3 | 210464-13 | 1,3-Dichloropropane | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW4D-S2-10 | 210464-14 | 1,3-Dichloropropane | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW4D-S3-15 | 210464-15 | 1,3-Dichloropropane | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW4D-S5-25 | 210464-17 | 1,3-Dichloropropane | N | Yes | U | J | EXE |
| 210464 | SW8260D | NA | MW4D-S8-40 | 210464-20 | Vinyl chloride | N | Yes | U | J | EXE |
| 210409 | SW8260D | NA | B17-S1D | 210409-21 | Toluene | N | Yes | U | UJ | FDP |
| 210409 | SW8260D | NA | B17-S1D | 210409-21 | o-Xylene | N | Yes | U | UJ | FDP |
| 2210543 | SM3500-CR I | NA | B11-W-20221026 | 2210543-001A | Chromium VI (Hexavalent) | N | Yes | U | UJ | HTQ |
| 211082 (2211108) | SM3500-CR I | NA | SW-1-20221103 | 2211108-001A | Chromium VI (Hexavalent) | N | Yes | U | UJ | HTQ |
| 211082 (2211108) | SM3500-CR I | NA | SW-2-20221103 | 2211108-002A | Chromium VI (Hexavalent) | N | Yes | U | UJ | HTQ |
| 211082 (2211108) | SM3500-CR I | NA | SW-3-20221103 | 2211108-003A | Chromium VI (Hexavalent) | N | Yes | U | UJ | HTQ |
| 210420 | SW8270E | NA | B11-W-20221026 | 210420-01 | 1-Methylnaphthalene | T | Yes | U | UJ | LCS |
| 210420 | SW8270E | NA | B11-W-20221026 | 210420-01 | 2-Methylnaphthalene | T | Yes | U | UJ | LCS |
| 210420 | SW8270E | NA | B11-W-20221026 | 210420-01 | Acenaphthene | T | Yes | U | UJ | LCS |
| 210420 | SW8270E | NA | B11-W-20221026 | 210420-01 | Acenaphthylene | T | Yes | U | UJ | LCS |
| 210420 | SW8270E | NA | B11-W-20221026 | 210420-01 | Fluorene | T | Yes | U | UJ | LCS |
| 210420 | SW8270E | NA | B11-W-20221026 | 210420-01 | Naphthalene | T | Yes | U | UJ | LCS |
| 210409 | SW8260D | NA | B13-S1-5 | 210409-01 | Benzene | N | Yes | 0.0021 | 0.0021 J | LCS |
| 210409 | SW8260D | NA | B13-S1-5 | 210409-01 | Ethylbenzene | N | Yes | 0.0041 | 0.0041 J | LCS |
| 210409 | SW8260D | NA | B13-S1-5 | 210409-01 | Toluene | N | Yes | 0.0096 | 0.0096 J | LCS |
| 210409 | SW8260D | NA | B13-S1-5 | 210409-01 | m,p-Xylenes | N | Yes | 0.021 | 0.021 J | LCS |
| 210409 | SW8260D | NA | B13-S1-5 | 210409-01 | o-Xylene | N | Yes | 0.0047 | 0.0047 J | LCS |
| 210409 | SW8270E | NA | B13-S1-5 | 210409-01 | Benzo(b)fluoranthene | N | Yes | 0.04 | 0.04 J | LCS |
| 210371 | SW8270E | NA | B13-W | 210371-02 | 1-Methylnaphthalene | N | Yes | U | UJ | LCS |
| 210371 | SW8270E | NA | B13-W | 210371-02 | 2-Methylnaphthalene | N | Yes | U | UJ | LCS |
| 210371 | SW8270E | NA | B13-W | 210371-02 | Acenaphthene | N | Yes | U | UJ | LCS |
| 210371 | SW8270E | NA | B13-W | 210371-02 | Acenaphthylene | N | Yes | U | UJ | LCS |
| 210371 | SW8270E | NA | B13-W | 210371-02 | Fluorene | N | Yes | U | UJ | LCS |

**TABLE E-12**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Fraction | Reportable Result | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| 210371 | SW8270E | NA | B13-W | 210371-02 | Naphthalene | N | Yes | U | UJ | LCS |
| 210408 | SW8260D | NA | B14-W | 210408-03 | Naphthalene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B14-W | 210408-03 | 1-Methylnaphthalene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B14-W | 210408-03 | 2-Methylnaphthalene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B14-W | 210408-03 | Acenaphthene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B14-W | 210408-03 | Acenaphthylene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B14-W | 210408-03 | Fluorene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B14-W | 210408-03 | Naphthalene | N | Yes | U | UJ | LCS |
| 210371 | SW8270E | NA | B15-W | 210371-01 | 1-Methylnaphthalene | N | Yes | U | UJ | LCS |
| 210371 | SW8270E | NA | B15-W | 210371-01 | 2-Methylnaphthalene | N | Yes | U | UJ | LCS |
| 210371 | SW8270E | NA | B15-W | 210371-01 | Acenaphthene | N | Yes | U | UJ | LCS |
| 210371 | SW8270E | NA | B15-W | 210371-01 | Acenaphthylene | N | Yes | U | UJ | LCS |
| 210371 | SW8270E | NA | B15-W | 210371-01 | Fluorene | N | Yes | U | UJ | LCS |
| 210371 | SW8270E | NA | B15-W | 210371-01 | Naphthalene | N | Yes | U | UJ | LCS |
| 210409 | SW8260D | NA | B16-S1-5 | 210409-32 | Benzene | N | Yes | 0.0012 | 0.0012 J | LCS |
| 210409 | SW8260D | NA | B16-S1-5 | 210409-32 | Ethylbenzene | N | Yes | 0.0012 | 0.0012 J | LCS |
| 210409 | SW8260D | NA | B16-S1-5 | 210409-32 | Toluene | N | Yes | 0.0072 | 0.0072 J | LCS |
| 210409 | SW8260D | NA | B16-S1-5 | 210409-32 | m,p-Xylenes | N | Yes | 0.0034 | 0.0034 J | LCS |
| 210409 | SW8260D | NA | B16-S1-5 | 210409-32 | o-Xylene | N | Yes | 0.0016 | 0.0016 J | LCS |
| 210409 | SW8260D | NA | B16-S3-15 | 210409-34 | Benzene | N | Yes | 0.001 | 0.001 J | LCS |
| 210409 | SW8260D | NA | B16-S3-15 | 210409-34 | Toluene | N | Yes | 0.0029 | 0.0029 J | LCS |
| 210409 | SW8260D | NA | B16-S3-15 | 210409-34 | m,p-Xylenes | N | Yes | 0.0044 | 0.0044 J | LCS |
| 210409 | SW8260D | NA | B16-S3-15 | 210409-34 | o-Xylene | N | Yes | 0.0011 | 0.0011 J | LCS |
| 210408 | SW8260D | NA | B16-W | 210408-02 | Naphthalene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B16-W | 210408-02 | 1-Methylnaphthalene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B16-W | 210408-02 | 2-Methylnaphthalene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B16-W | 210408-02 | Acenaphthene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B16-W | 210408-02 | Acenaphthylene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B16-W | 210408-02 | Fluorene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B16-W | 210408-02 | Naphthalene | N | Yes | U | UJ | LCS |
| 210409 | SW8260D | NA | B17-S1-5 | 210409-11 | Benzene | N | Yes | 0.0012 | 0.0012 J | LCS |
| 210409 | SW8260D | NA | B17-S5-25 | 210409-15 | Toluene | N | Yes | 0.002 | 0.002 J | LCS |
| 210408 | SW8260D | NA | B17-W | 210408-01 | Naphthalene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B17-W | 210408-01 | 1-Methylnaphthalene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B17-W | 210408-01 | 2-Methylnaphthalene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B17-W | 210408-01 | Acenaphthene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B17-W | 210408-01 | Acenaphthylene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B17-W | 210408-01 | Fluorene | N | Yes | U | UJ | LCS |
| 210408 | SW8270E | NA | B17-W | 210408-01 | Naphthalene | N | Yes | U | UJ | LCS |
| 210409 | SW8260D | NA | B17-S1-5 | 210409-11 | Toluene | N | Yes | 0.0036 | 0.0036 J | LCS, FDP |
| 210409 | SW8260D | NA | B17-S1-5 | 210409-11 | o-Xylene | N | Yes | 0.0021 | 0.0021 J | LCS, FDP |
| 210348 | SW8270E | NA | B12-W | 210348-01 | Phenanthrene | N | Yes | 0.031 | 0.031 U | MBK |
| 210409 | SW6020B | NA | B11-S1-5 | 210409-42 | Arsenic | N | Yes | 1.89 | 1.89 J- | MSD |
| 210409 | SW6020B | NA | B11-S1-5 | 210409-42 | Barium | N | Yes | 94.5 | 94.5 J+ | MSD |
| 210409 | SW6020B | NA | B11-S1-5 | 210409-42 | Chromium | N | Yes | 23.3 | 23.3 J- | MSD |
| 210409 | SW6020B | NA | B11-S1-5 | 210409-42 | Copper | N | Yes | 61.6 | 61.6 J- | MSD |
| 210409 | SW6020B | NA | B11-S1-5 | 210409-42 | Nickel | N | Yes | 18.6 | 18.6 J- | MSD |
| 210409 | SW6020B | NA | B11-S1-5 | 210409-42 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B11-S1-5 | 210409-42 | Zinc | N | Yes | 50.5 | 50.5 J- | MSD |
| 210409 | SW6020B | NA | B11-S10-50 | 210409-52 | Arsenic | N | Yes | 4.07 | 4.07 J- | MSD |
| 210409 | SW6020B | NA | B11-S10-50 | 210409-52 | Barium | N | Yes | 45.8 | 45.8 J+ | MSD |
| 210409 | SW6020B | NA | B11-S10-50 | 210409-52 | Chromium | N | Yes | 7.23 | 7.23 J- | MSD |
| 210409 | SW6020B | NA | B11-S10-50 | 210409-52 | Copper | N | Yes | 30.1 | 30.1 J- | MSD |
| 210409 | SW6020B | NA | B11-S10-50 | 210409-52 | Nickel | N | Yes | 6.75 | 6.75 J- | MSD |
| 210409 | SW6020B | NA | B11-S10-50 | 210409-52 | Selenium | N | No | U | UJ | MSD |
| 210409 | SW6020B | NA | B11-S10-50 | 210409-52 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B11-S10-50 | 210409-52 | Zinc | N | Yes | 33.6 | 33.6 J- | MSD |
| 210409 | SW6020B | NA | B11-S1D | 210409-44 | Arsenic | N | Yes | 1.16 | 1.16 J- | MSD |
| 210409 | SW6020B | NA | B11-S1D | 210409-44 | Barium | N | Yes | 68.5 | 68.5 J+ | MSD |
| 210409 | SW6020B | NA | B11-S1D | 210409-44 | Chromium | N | Yes | 19.5 | 19.5 J- | MSD |
| 210409 | SW6020B | NA | B11-S1D | 210409-44 | Copper | N | Yes | 48.8 | 48.8 J- | MSD |
| 210409 | SW6020B | NA | B11-S1D | 210409-44 | Nickel | N | Yes | 15.5 | 15.5 J- | MSD |
| 210409 | SW6020B | NA | B11-S1D | 210409-44 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B11-S1D | 210409-44 | Zinc | N | Yes | 45.9 | 45.9 J- | MSD |
| 210409 | SW6020B | NA | B11-S3-15 | 210409-45 | Arsenic | N | Yes | 2.59 | 2.59 J- | MSD |
| 210409 | SW6020B | NA | B11-S3-15 | 210409-45 | Barium | N | Yes | 52 | 52 J+ | MSD |
| 210409 | SW6020B | NA | B11-S3-15 | 210409-45 | Chromium | N | Yes | 14.1 | 14.1 J- | MSD |
| 210409 | SW6020B | NA | B11-S3-15 | 210409-45 | Copper | N | Yes | 44.3 | 44.3 J- | MSD |
| 210409 | SW6020B | NA | B11-S3-15 | 210409-45 | Nickel | N | Yes | 17.8 | 17.8 J- | MSD |
| 210409 | SW6020B | NA | B11-S3-15 | 210409-45 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B11-S3-15 | 210409-45 | Zinc | N | Yes | 42.7 | 42.7 J- | MSD |
| 210409 | SW6020B | NA | B11-S7-35 | 210409-49 | Arsenic | N | Yes | 5.01 | 5.01 J- | MSD |
| 210409 | SW6020B | NA | B11-S7-35 | 210409-49 | Barium | N | Yes | 50.7 | 50.7 J+ | MSD |
| 210409 | SW6020B | NA | B11-S7-35 | 210409-49 | Chromium | N | Yes | 8.42 | 8.42 J- | MSD |
| 210409 | SW6020B | NA | B11-S7-35 | 210409-49 | Copper | N | Yes | 32.5 | 32.5 J- | MSD |
| 210409 | SW6020B | NA | B11-S7-35 | 210409-49 | Nickel | N | Yes | 7.46 | 7.46 J- | MSD |
| 210409 | SW6020B | NA | B11-S7-35 | 210409-49 | Selenium | N | No | U | UJ | MSD |
| 210409 | SW6020B | NA | B11-S7-35 | 210409-49 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B11-S7-35 | 210409-49 | Zinc | N | Yes | 35.3 | 35.3 J- | MSD |
| 210409 | SW6020B | NA | B13-S1-5 | 210409-01 | Arsenic | N | Yes | 2.68 | 2.68 J- | MSD |
| 210409 | SW6020B | NA | B13-S1-5 | 210409-01 | Barium | N | Yes | 125 | 125 J+ | MSD |
| 210409 | SW6020B | NA | B13-S1-5 | 210409-01 | Chromium | N | Yes | 17.2 | 17.2 J- | MSD |
| 210409 | SW6020B | NA | B13-S1-5 | 210409-01 | Copper | N | Yes | 64 | 64 J- | MSD |
| 210409 | SW6020B | NA | B13-S1-5 | 210409-01 | Nickel | N | Yes | 20 | 20 J- | MSD |
| 210409 | SW6020B | NA | B13-S1-5 | 210409-01 | Selenium | N | Yes | U | UJ | MSD |

**TABLE E-12**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Fraction | Reportable Result | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| 210409 | SW6020B | NA | B13-S1-5 | 210409-01 | Zinc | N | Yes | 65.9 | 65.9 J- | MSD |
| 210409 | SW6020B | NA | B13-S10-50 | 210409-10 | Arsenic | N | Yes | 4.57 | 4.57 J- | MSD |
| 210409 | SW6020B | NA | B13-S10-50 | 210409-10 | Barium | N | Yes | 34.1 | 34.1 J+ | MSD |
| 210409 | SW6020B | NA | B13-S10-50 | 210409-10 | Chromium | N | Yes | 11.8 | 11.8 J- | MSD |
| 210409 | SW6020B | NA | B13-S10-50 | 210409-10 | Copper | N | Yes | 30.2 | 30.2 J- | MSD |
| 210409 | SW6020B | NA | B13-S10-50 | 210409-10 | Nickel | N | Yes | 8.88 | 8.88 J- | MSD |
| 210409 | SW6020B | NA | B13-S10-50 | 210409-10 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B13-S10-50 | 210409-10 | Zinc | N | Yes | 33 | 33 J- | MSD |
| 210409 | SW6020B | NA | B13-S2-10 | 210409-02 | Arsenic | N | Yes | 1.8 | 1.8 J- | MSD |
| 210409 | SW6020B | NA | B13-S2-10 | 210409-02 | Barium | N | Yes | 67.1 | 67.1 J+ | MSD |
| 210409 | SW6020B | NA | B13-S2-10 | 210409-02 | Chromium | N | Yes | 15 | 15 J- | MSD |
| 210409 | SW6020B | NA | B13-S2-10 | 210409-02 | Copper | N | Yes | 37.9 | 37.9 J- | MSD |
| 210409 | SW6020B | NA | B13-S2-10 | 210409-02 | Nickel | N | Yes | 11.5 | 11.5 J- | MSD |
| 210409 | SW6020B | NA | B13-S2-10 | 210409-02 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B13-S2-10 | 210409-02 | Zinc | N | Yes | 49.9 | 49.9 J- | MSD |
| 210409 | SW6020B | NA | B13-S4-20 | 210409-04 | Arsenic | N | Yes | 3 | 3 J- | MSD |
| 210409 | SW6020B | NA | B13-S4-20 | 210409-04 | Barium | N | Yes | 30.7 | 30.7 J+ | MSD |
| 210409 | SW6020B | NA | B13-S4-20 | 210409-04 | Chromium | N | Yes | 8.1 | 8.1 J- | MSD |
| 210409 | SW6020B | NA | B13-S4-20 | 210409-04 | Copper | N | Yes | 55.6 | 55.6 J- | MSD |
| 210409 | SW6020B | NA | B13-S4-20 | 210409-04 | Nickel | N | Yes | 5.6 | 5.6 J- | MSD |
| 210409 | SW6020B | NA | B13-S4-20 | 210409-04 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B13-S4-20 | 210409-04 | Zinc | N | Yes | 37.4 | 37.4 J- | MSD |
| 210371 | E1631E | NA | B13-W | 210371-02 | Mercury | T | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B14-S1-5 | 210409-22 | Arsenic | N | Yes | 2.5 | 2.5 J- | MSD |
| 210409 | SW6020B | NA | B14-S1-5 | 210409-22 | Barium | N | Yes | 116 | 116 J+ | MSD |
| 210409 | SW6020B | NA | B14-S1-5 | 210409-22 | Chromium | N | Yes | 17.5 | 17.5 J- | MSD |
| 210409 | SW6020B | NA | B14-S1-5 | 210409-22 | Copper | N | Yes | 71.2 | 71.2 J- | MSD |
| 210409 | SW6020B | NA | B14-S1-5 | 210409-22 | Nickel | N | Yes | 15.2 | 15.2 J- | MSD |
| 210409 | SW6020B | NA | B14-S1-5 | 210409-22 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B14-S1-5 | 210409-22 | Zinc | N | Yes | 50.2 | 50.2 J- | MSD |
| 210409 | SW6020B | NA | B14-S2-10 | 210409-23 | Arsenic | N | Yes | 1.52 | 1.52 J- | MSD |
| 210409 | SW6020B | NA | B14-S2-10 | 210409-23 | Barium | N | Yes | 37.6 | 37.6 J+ | MSD |
| 210409 | SW6020B | NA | B14-S2-10 | 210409-23 | Chromium | N | Yes | 10.1 | 10.1 J- | MSD |
| 210409 | SW6020B | NA | B14-S2-10 | 210409-23 | Copper | N | Yes | 53.6 | 53.6 J- | MSD |
| 210409 | SW6020B | NA | B14-S2-10 | 210409-23 | Nickel | N | Yes | 12 | 12 J- | MSD |
| 210409 | SW6020B | NA | B14-S2-10 | 210409-23 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B14-S2-10 | 210409-23 | Zinc | N | Yes | 49.6 | 49.6 J- | MSD |
| 210409 | SW6020B | NA | B14-S4-19 | 210409-25 | Arsenic | N | Yes | 1.76 | 1.76 J- | MSD |
| 210409 | SW6020B | NA | B14-S4-19 | 210409-25 | Barium | N | Yes | 33.9 | 33.9 J+ | MSD |
| 210409 | SW6020B | NA | B14-S4-19 | 210409-25 | Chromium | N | Yes | 12 | 12 J- | MSD |
| 210409 | SW6020B | NA | B14-S4-19 | 210409-25 | Copper | N | Yes | 48.6 | 48.6 J- | MSD |
| 210409 | SW6020B | NA | B14-S4-19 | 210409-25 | Nickel | N | Yes | 11.2 | 11.2 J- | MSD |
| 210409 | SW6020B | NA | B14-S4-19 | 210409-25 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B14-S4-19 | 210409-25 | Zinc | N | Yes | 52.3 | 52.3 J- | MSD |
| 210409 | SW6020B | NA | B14-S8-40 | 210409-29 | Arsenic | N | Yes | 6.23 | 6.23 J- | MSD |
| 210409 | SW6020B | NA | B14-S8-40 | 210409-29 | Barium | N | Yes | 51.2 | 51.2 J+ | MSD |
| 210409 | SW6020B | NA | B14-S8-40 | 210409-29 | Chromium | N | Yes | 11.9 | 11.9 J- | MSD |
| 210409 | SW6020B | NA | B14-S8-40 | 210409-29 | Copper | N | Yes | 41.9 | 41.9 J- | MSD |
| 210409 | SW6020B | NA | B14-S8-40 | 210409-29 | Nickel | N | Yes | 9.65 | 9.65 J- | MSD |
| 210409 | SW6020B | NA | B14-S8-40 | 210409-29 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B14-S8-40 | 210409-29 | Zinc | N | Yes | 44.5 | 44.5 J- | MSD |
| 210371 | E1631E | NA | B15-W | 210371-01 | Mercury | T | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B16-S1-5 | 210409-32 | Arsenic | N | Yes | 1.55 | 1.55 J- | MSD |
| 210409 | SW6020B | NA | B16-S1-5 | 210409-32 | Barium | N | Yes | 177 | 177 J+ | MSD |
| 210409 | SW6020B | NA | B16-S1-5 | 210409-32 | Chromium | N | Yes | 29.9 | 29.9 J- | MSD |
| 210409 | SW6020B | NA | B16-S1-5 | 210409-32 | Copper | N | Yes | 64.1 | 64.1 J- | MSD |
| 210409 | SW6020B | NA | B16-S1-5 | 210409-32 | Nickel | N | Yes | 21.6 | 21.6 J- | MSD |
| 210409 | SW6020B | NA | B16-S1-5 | 210409-32 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B16-S1-5 | 210409-32 | Zinc | N | Yes | 47.8 | 47.8 J- | MSD |
| 210409 | SW6020B | NA | B16-S10-50 | 210409-41 | Arsenic | N | Yes | 3.73 | 3.73 J- | MSD |
| 210409 | SW6020B | NA | B16-S10-50 | 210409-41 | Barium | N | Yes | 30.4 | 30.4 J+ | MSD |
| 210409 | SW6020B | NA | B16-S10-50 | 210409-41 | Chromium | N | Yes | 8.05 | 8.05 J- | MSD |
| 210409 | SW6020B | NA | B16-S10-50 | 210409-41 | Copper | N | Yes | 34.5 | 34.5 J- | MSD |
| 210409 | SW6020B | NA | B16-S10-50 | 210409-41 | Nickel | N | Yes | 8.03 | 8.03 J- | MSD |
| 210409 | SW6020B | NA | B16-S10-50 | 210409-41 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B16-S10-50 | 210409-41 | Zinc | N | Yes | 38.2 | 38.2 J- | MSD |
| 210409 | SW6020B | NA | B16-S2-7 | 210409-33 | Arsenic | N | Yes | 1.22 | 1.22 J- | MSD |
| 210409 | SW6020B | NA | B16-S2-7 | 210409-33 | Barium | N | Yes | 68.6 | 68.6 J+ | MSD |
| 210409 | SW6020B | NA | B16-S2-7 | 210409-33 | Chromium | N | Yes | 25.4 | 25.4 J- | MSD |
| 210409 | SW6020B | NA | B16-S2-7 | 210409-33 | Copper | N | Yes | 56.1 | 56.1 J- | MSD |
| 210409 | SW6020B | NA | B16-S2-7 | 210409-33 | Nickel | N | Yes | 17.5 | 17.5 J- | MSD |
| 210409 | SW6020B | NA | B16-S2-7 | 210409-33 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B16-S2-7 | 210409-33 | Zinc | N | Yes | 53 | 53 J- | MSD |
| 210409 | SW6020B | NA | B16-S3-15 | 210409-34 | Arsenic | N | Yes | 2.44 | 2.44 J- | MSD |
| 210409 | SW6020B | NA | B16-S3-15 | 210409-34 | Barium | N | Yes | 40.4 | 40.4 J+ | MSD |
| 210409 | SW6020B | NA | B16-S3-15 | 210409-34 | Chromium | N | Yes | 12.7 | 12.7 J- | MSD |
| 210409 | SW6020B | NA | B16-S3-15 | 210409-34 | Copper | N | Yes | 45.4 | 45.4 J- | MSD |
| 210409 | SW6020B | NA | B16-S3-15 | 210409-34 | Nickel | N | Yes | 10.3 | 10.3 J- | MSD |
| 210409 | SW6020B | NA | B16-S3-15 | 210409-34 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B16-S3-15 | 210409-34 | Zinc | N | Yes | 52.4 | 52.4 J- | MSD |
| 210409 | SW6020B | NA | B16-S5-25 | 210409-36 | Arsenic | N | Yes | 2.16 | 2.16 J- | MSD |
| 210409 | SW6020B | NA | B16-S5-25 | 210409-36 | Barium | N | Yes | 61 | 61 J+ | MSD |
| 210409 | SW6020B | NA | B16-S5-25 | 210409-36 | Chromium | N | Yes | 10.7 | 10.7 J- | MSD |
| 210409 | SW6020B | NA | B16-S5-25 | 210409-36 | Copper | N | Yes | 41.2 | 41.2 J- | MSD |
| 210409 | SW6020B | NA | B16-S5-25 | 210409-36 | Nickel | N | Yes | 9.21 | 9.21 J- | MSD |

**TABLE E-12**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Fraction | Reportable Result | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| 210409 | SW6020B | NA | B16-S5-25 | 210409-36 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B16-S5-25 | 210409-36 | Zinc | N | Yes | 50.8 | 50.8 J- | MSD |
| 210409 | SW6020B | NA | B17-S1-5 | 210409-11 | Arsenic | N | Yes | 2.56 | 2.56 J- | MSD |
| 210409 | SW6020B | NA | B17-S1-5 | 210409-11 | Barium | N | Yes | 123 | 123 J+ | MSD |
| 210409 | SW6020B | NA | B17-S1-5 | 210409-11 | Chromium | N | Yes | 15.4 | 15.4 J- | MSD |
| 210409 | SW6020B | NA | B17-S1-5 | 210409-11 | Copper | N | Yes | 56.8 | 56.8 J- | MSD |
| 210409 | SW6020B | NA | B17-S1-5 | 210409-11 | Nickel | N | Yes | 14.8 | 14.8 J- | MSD |
| 210409 | SW6020B | NA | B17-S1-5 | 210409-11 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B17-S1-5 | 210409-11 | Zinc | N | Yes | 55.9 | 55.9 J- | MSD |
| 210409 | SW6020B | NA | B17-S1D | 210409-21 | Arsenic | N | Yes | 2.73 | 2.73 J- | MSD |
| 210409 | SW6020B | NA | B17-S1D | 210409-21 | Barium | N | Yes | 138 | 138 J+ | MSD |
| 210409 | SW6020B | NA | B17-S1D | 210409-21 | Chromium | N | Yes | 17.1 | 17.1 J- | MSD |
| 210409 | SW6020B | NA | B17-S1D | 210409-21 | Copper | N | Yes | 48.3 | 48.3 J- | MSD |
| 210409 | SW6020B | NA | B17-S1D | 210409-21 | Nickel | N | Yes | 17.5 | 17.5 J- | MSD |
| 210409 | SW6020B | NA | B17-S1D | 210409-21 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B17-S1D | 210409-21 | Zinc | N | Yes | 63.1 | 63.1 J- | MSD |
| 210409 | SW6020B | NA | B17-S3-15 | 210409-13 | Arsenic | N | Yes | 1.3 | 1.3 J- | MSD |
| 210409 | SW6020B | NA | B17-S3-15 | 210409-13 | Barium | N | Yes | 47.4 | 47.4 J+ | MSD |
| 210409 | SW6020B | NA | B17-S3-15 | 210409-13 | Chromium | N | Yes | 12.1 | 12.1 J- | MSD |
| 210409 | SW6020B | NA | B17-S3-15 | 210409-13 | Copper | N | Yes | 51.9 | 51.9 J- | MSD |
| 210409 | SW6020B | NA | B17-S3-15 | 210409-13 | Nickel | N | Yes | 9.4 | 9.4 J- | MSD |
| 210409 | SW6020B | NA | B17-S3-15 | 210409-13 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B17-S3-15 | 210409-13 | Zinc | N | Yes | 51.2 | 51.2 J- | MSD |
| 210409 | SW6020B | NA | B17-S5-25 | 210409-15 | Arsenic | N | Yes | 1.39 | 1.39 J- | MSD |
| 210409 | SW6020B | NA | B17-S5-25 | 210409-15 | Barium | N | Yes | 23 | 23 J+ | MSD |
| 210409 | SW6020B | NA | B17-S5-25 | 210409-15 | Chromium | N | Yes | 14.8 | 14.8 J- | MSD |
| 210409 | SW6020B | NA | B17-S5-25 | 210409-15 | Copper | N | Yes | 48.6 | 48.6 J- | MSD |
| 210409 | SW6020B | NA | B17-S5-25 | 210409-15 | Nickel | N | Yes | 13.1 | 13.1 J- | MSD |
| 210409 | SW6020B | NA | B17-S5-25 | 210409-15 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B17-S5-25 | 210409-15 | Zinc | N | Yes | 46 | 46 J- | MSD |
| 210409 | SW6020B | NA | B17-S8-40 | 210409-18 | Arsenic | N | Yes | 5.29 | 5.29 J- | MSD |
| 210409 | SW6020B | NA | B17-S8-40 | 210409-18 | Barium | N | Yes | 50.7 | 50.7 J+ | MSD |
| 210409 | SW6020B | NA | B17-S8-40 | 210409-18 | Chromium | N | Yes | 10.6 | 10.6 J- | MSD |
| 210409 | SW6020B | NA | B17-S8-40 | 210409-18 | Copper | N | Yes | 48.4 | 48.4 J- | MSD |
| 210409 | SW6020B | NA | B17-S8-40 | 210409-18 | Nickel | N | Yes | 10 | 10 J- | MSD |
| 210409 | SW6020B | NA | B17-S8-40 | 210409-18 | Selenium | N | Yes | U | UJ | MSD |
| 210409 | SW6020B | NA | B17-S8-40 | 210409-18 | Zinc | N | Yes | 51.9 | 51.9 J- | MSD |
| 210464 | SW6020B | NA | MW2D-S1-5 | 210464-24 | Barium | N | Yes | 162 | 162 J+ | MSD |
| 210464 | SW6020B | NA | MW2D-S1-5 | 210464-24 | Selenium | N | Yes | U | UJ | MSD |
| 210464 | SW6020B | NA | MW2D-S1-5-DUP | 210464-25 | Barium | N | Yes | 161 | 161 J+ | MSD |
| 210464 | SW6020B | NA | MW2D-S1-5-DUP | 210464-25 | Selenium | N | Yes | U | UJ | MSD |
| 210464 | SW6020B | NA | MW2D-S2-10 | 210464-26 | Barium | N | Yes | 88.6 | 88.6 J+ | MSD |
| 210464 | SW6020B | NA | MW2D-S2-10 | 210464-26 | Selenium | N | Yes | U | UJ | MSD |
| 210464 | SW6020B | NA | MW2D-S4-20 | 210464-28 | Barium | N | Yes | 35 | 35 J+ | MSD |
| 210464 | SW6020B | NA | MW2D-S4-20 | 210464-28 | Selenium | N | Yes | U | UJ | MSD |
| 210464 | SW6020B | NA | MW3D-S1-5 | 210464-01 | Barium | N | Yes | 125 | 125 J+ | MSD |
| 210464 | SW6020B | NA | MW3D-S1-5 | 210464-01 | Selenium | N | Yes | U | UJ | MSD |
| 210464 | SW6020B | NA | MW3D-S2-10 | 210464-02 | Barium | N | Yes | 50.7 | 50.7 J+ | MSD |
| 210464 | SW6020B | NA | MW3D-S2-10 | 210464-02 | Selenium | N | Yes | U | UJ | MSD |
| 210464 | SW6020B | NA | MW3D-S5-25 | 210464-05 | Barium | N | Yes | 52.7 | 52.7 J+ | MSD |
| 210464 | SW6020B | NA | MW3D-S5-25 | 210464-05 | Selenium | N | Yes | U | UJ | MSD |
| 210464 | SW6020B | NA | MW4D-S1-3 | 210464-13 | Barium | N | Yes | 63 | 63 J+ | MSD |
| 210464 | SW6020B | NA | MW4D-S1-3 | 210464-13 | Selenium | N | Yes | U | UJ | MSD |
| 210464 | SW6020B | NA | MW4D-S5-25 | 210464-17 | Barium | N | Yes | 49.2 | 49.2 J+ | MSD |
| 210464 | SW6020B | NA | MW4D-S5-25 | 210464-17 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-1-0.75 | 210248-01 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-10-0.5 | 210248-12 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-11-0.5 | 210248-13 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-12-0.5 | 210248-14 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-2-0.5 | 210248-02 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-3-0.5 | 210248-03 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-4-1.5 | 210248-06 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-5-0.5 | 210248-07 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-6-0.5 | 210248-08 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-7A-0.5 | 210248-09 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-8-0.5 | 210248-10 | Selenium | N | Yes | U | UJ | MSD |
| 210248 | SW6020B | NA | SS-9-0.5 | 210248-11 | Selenium | N | Yes | U | UJ | MSD |
| 210248 (2210299) | SW9060 | NA | SS-12-0.5 | 2210299-014A | Carbon | N | Yes | 0.282 | 0.282 J | MSD, DUP |
| 2210543 | NWEPH | NA | B11-W-20221026 | 2210543-001B | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | N | Yes | U | R | SUR |
| 2210543 | NWEPH | NA | B11-W-20221026 | 2210543-001B | Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | N | Yes | U | R | SUR |
| 2210543 | NWEPH | NA | B11-W-20221026 | 2210543-001B | Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | N | Yes | U | R | SUR |
| 2210543 | NWEPH | NA | B11-W-20221026 | 2210543-001B | Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | N | Yes | U | R | SUR |
| 2210543 | NWEPH | NA | B11-W-20221026 | 2210543-001B | Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B14-W | 2210513-003B | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B14-W | 2210513-003B | Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | N | Yes | U | UJ | SUR |
| 210408 (2210513) | NWEPH | NA | B14-W | 2210513-003B | Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B14-W | 2210513-003B | Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | N | Yes | U | UJ | SUR |
| 210408 (2210513) | NWEPH | NA | B14-W | 2210513-003B | Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B14-W | 2210513-003B | Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | N | Yes | 45.5 | 45.5 J- | SUR |
| 210408 (2210513) | NWEPH | NA | B14-W | 2210513-003B | Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B14-W | 2210513-003B | Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | N | Yes | U | UJ | SUR |
| 210408 (2210513) | NWEPH | NA | B14-W | 2210513-003B | Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B14-W | 2210513-003B | Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | N | Yes | U | UJ | SUR |
| 210408 (2210513) | NWEPH | NA | B16-W | 2210513-002B | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B16-W | 2210513-002B | Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | N | Yes | U | R | SUR |

**TABLE E-12**
**SYSTEM PERFORMANCE SUMMARY**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Fraction | Reportable Result | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| 210408 (2210513) | NWEPH | NA | B16-W | 2210513-002B | Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B16-W | 2210513-002B | Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B16-W | 2210513-002B | Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B17-W | 2210513-001B | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B17-W | 2210513-001B | Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B17-W | 2210513-001B | Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B17-W | 2210513-001B | Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | N | Yes | U | R | SUR |
| 210408 (2210513) | NWEPH | NA | B17-W | 2210513-001B | Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | N | Yes | U | R | SUR |
| 211082 | SW6020B | NA | SW-1-20221103 | 211082-01 | Arsenic | N | Yes | U | UJ | VCM |
| 211082 | SW6020B | NA | SW-2-20221103 | 211082-02 | Arsenic | N | Yes | U | UJ | VCM |
| 211082 | SW6020B | NA | SW-3-20221103 | 211082-03 | Arsenic | N | Yes | U | UJ | VCM |
| 211083 | SW6020B | NA | MW-1D-20221103 | 211083-01 | Copper | N | Yes | U | UJ | VCM |
| 211083 | SW6020B | NA | MW-1DD-20221103 | 211083-02 | Copper | N | Yes | U | UJ | VCM |
| 211083 | SW6020B | NA | MW-2D-20221103 | 211083-03 | Copper | N | Yes | U | UJ | VCM |
| 210248 | SW8260D | NA | SS-9-0.5 | 210248-11 | Methylene chloride (Dichloromethane) | N | Yes | 0.26 JL | 0.26 J, LC | LC |
| 210248 | SW8260D | NA | SS-11-0.5 | 210248-13 | Methylene chloride (Dichloromethane) | N | Yes | 0.21 JL | 0.21 J, LC | LC |
| 210370 | SW8260D | NA | B12-S4-20 | 210370-04 | Methylene chloride (Dichloromethane) | N | Yes | 1.1 JL | 1.1 J, LC | LC |
| 210370 | SW8260D | NA | B12-S10-50 | 210370-10 | Methylene chloride (Dichloromethane) | N | Yes | 0.66 JL | 0.66 J, LC | LC |
| 210409 | SW8260D | NA | B17-S5-25 | 210409-15 | Methylene chloride (Dichloromethane) | N | Yes | 0.3 JL | 0.3 J, LC | LC |

***Notes:***

*DUP = Laboratory duplicate relative percent difference exceeds the specified limits.*

*EXE = Result exceeds the calibration range.*

*FDP = Field duplicate qualifier due to an exceedance of the specified limits.*

*HTQ = Holding time exceedance.*

*LC = Laboratory contamination.*

*LCS = Laboratory control/laboratory control spike duplicate percent recoveries or relative percent difference were outside the specified limits.*

*MBK = Method blank contamination.*

*MSD = Matrix spike/matrix spike duplicate percent recoveries or relative percent difference were outside the specified limits.*

*SUR = Surrogate percent recovery outside the specified limits.*

*VCM = Validator's choice of method.*

*J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.*

*J- = The result is an estimated quantity, but the result may be biased low.*

*J+ = The result is an estimated quantity, but the result may be biased high.*

*R = The sample results were rejected as unusable; the compound may or may not be present in the sample.*

*U = The compound was analyzed for but not detected.*

*UJ = The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.*

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
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November 11, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on October 18, 2022 from the Kosmos 0202832-001-001, F&BI 210248 project. There are 66 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data. Andrew Nakahara
HNA1111R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 18, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos 0202832-001-001, F&BI 210248 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 210248 -01 | SS-1-0.75 |
| 210248 -02 | SS-2-0.5 |
| 210248 -03 | SS-3-0.5 |
| 210248 -04 | SS-4-0.5 |
| 210248 -05 | SS-4-1.0 |
| 210248 -06 | SS-4-1.5 |
| 210248 -07 | SS-5-0.5 |
| 210248 -08 | SS-6-0.5 |
| 210248 -09 | SS-7a-0.5 |
| 210248 -10 | SS-8-0.5 |
| 210248 -11 | SS-9-0.5 |
| 210248 -12 | SS-10-0.5 |
| 210248 -13 | SS-11-0.5 |
| 210248 -14 | SS-12-0.5 |

Samples SS-1-0.75, SS-2-0.5, SS-3-0.5, SS-4-1.5, SS-5-0.5, SS-6-0.5, SS-7a-0.5, SS-8-0.5, SS-9-0.5, SS-10-0.5, SS-11-0.5, and SS-12-0.5 were sent to Fremont Analytical for hexavalent chromium and total organic carbon analyses. The report is enclosed.

Methylene chloride was detected in the 8260D analysis of sample SS-9-0.5. The data were flagged as due to laboratory contamination.

Selenium in the 6020B matrix spike and matrix spike duplicate failed the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

All other quality control requirements were acceptable.

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248
Date Extracted: 10/19/22
Date Analyzed: 10/19/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| SS-1-0.75<br>210248-01 | <5 | 88 |
| SS-2-0.5<br>210248-02 | <5 | 89 |
| SS-3-0.5<br>210248-03 | <5 | 86 |
| SS-4-1.5<br>210248-06 | <5 | 90 |
| SS-5-0.5<br>210248-07 | <5 | 87 |
| SS-6-0.5<br>210248-08 | <5 | 91 |
| SS-7a-0.5<br>210248-09 | <5 | 89 |
| SS-8-0.5<br>210248-10 | <5 | 89 |
| SS-9-0.5<br>210248-11 | <5 | 93 |
| SS-10-0.5<br>210248-12 | <5 | 90 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248
Date Extracted: 10/19/22
Date Analyzed: 10/19/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| SS-11-0.5<br>210248-13 | <5 | 90 |
| SS-12-0.5<br>210248-14 | <5 | 88 |
| Method Blank<br>02-2513 MB | <5 | 108 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248
Date Extracted: 10/19/22
Date Analyzed: 10/19/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 48-168) |
|---|---|---|---|
| SS-1-0.75<br>210248-01 | <50 | <250 | 74 |
| SS-2-0.5<br>210248-02 | <50 | <250 | 87 |
| SS-3-0.5<br>210248-03 | <50 | <250 | 76 |
| SS-4-1.5<br>210248-06 | <50 | <250 | 55 |
| SS-5-0.5<br>210248-07 | <50 | <250 | 72 |
| SS-6-0.5<br>210248-08 | <50 | <250 | 73 |
| SS-7a-0.5<br>210248-09 | <50 | <250 | 85 |
| SS-8-0.5<br>210248-10 | <50 | <250 | 89 |
| SS-9-0.5<br>210248-11 | <50 | <250 | 83 |
| SS-10-0.5<br>210248-12 | <50 | <250 | 110 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248
Date Extracted: 10/19/22
Date Analyzed: 10/19/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 48-168) |
|---|---|---|---|
| SS-11-0.5<br>210248-13 | <50 | <250 | 94 |
| SS-12-0.5<br>210248-14 | <50 | <250 | 79 |
| Method Blank<br>02-2542 MB | <50 | <250 | 78 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-1-0.75 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-01 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-01.161 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.21 |
| Barium | 29.9 |
| Cadmium | <1 |
| Lead | 1.61 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-1-0.75 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-01 x5 |
| Date Analyzed: | 11/08/22 | Data File: | 210248-01 x5.144 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 6.88 |
| Copper | 33.0 |
| Nickel | 6.96 |
| Zinc | 36.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-2-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-02 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-02.164 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.43 |
| Barium | 29.8 |
| Cadmium | <1 |
| Lead | 1.61 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-2-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-02 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-02 x5.296 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 7.24 |
| Copper | 42.1 |
| Nickel | 11.6 |
| Zinc | 43.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-3-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-03 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-03.165 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.19 |
| Barium | 36.0 |
| Cadmium | <1 |
| Lead | 2.32 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-3-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-03 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-03 x5.297 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 11.2 |
| Copper | 45.5 |
| Nickel | 11.9 |
| Zinc | 47.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-4-1.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-06 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-06.166 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.14 |
| Barium | 33.3 |
| Cadmium | <1 |
| Lead | 1.76 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-4-1.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-06 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-06 x5.300 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 11.2 |
| Copper | 40.0 |
| Nickel | 11.0 |
| Zinc | 44.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-5-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-07 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-07.167 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.51 |
| Barium | 28.2 |
| Cadmium | <1 |
| Lead | 1.50 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-5-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-07 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-07 x5.301 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 7.49 |
| Copper | 48.7 |
| Nickel | 10.4 |
| Zinc | 48.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-6-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-08 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-08.168 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.43 |
| Barium | 33.5 |
| Cadmium | <1 |
| Lead | 1.86 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-6-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-08 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-08 x5.302 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 6.43 |
| Copper | 39.6 |
| Nickel | 9.98 |
| Zinc | 44.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-7a-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-09 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-09.169 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.30 |
| Barium | 30.8 |
| Cadmium | <1 |
| Lead | 1.72 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-7a-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-09 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-09 x5.304 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 10.7 |
| Copper | 68.6 |
| Nickel | 11.5 |
| Zinc | 48.0 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-8-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-10 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-10.170 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.41 |
| Barium | 31.8 |
| Cadmium | <1 |
| Lead | 1.44 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-8-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-10 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-10 x5.305 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 8.29 |
| Copper | 63.4 |
| Nickel | 9.95 |
| Zinc | 41.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-9-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-11 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-11.173 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.32 |
| Barium | 29.1 |
| Cadmium | <1 |
| Lead | 1.93 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-9-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-11 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-11 x5.306 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 8.72 |
| Copper | 59.1 |
| Nickel | 10.0 |
| Zinc | 48.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-10-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-12 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-12.174 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.05 |
| Barium | 40.5 |
| Cadmium | <1 |
| Lead | 2.41 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-10-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-12 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-12 x5.307 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 10.5 |
| Copper | 55.0 |
| Nickel | 10.7 |
| Zinc | 46.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-11-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-13 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-13.175 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.62 |
| Barium | 36.3 |
| Cadmium | <1 |
| Lead | 1.73 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-11-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-13 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-13 x5.308 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 9.09 |
| Copper | 53.0 |
| Nickel | 10.3 |
| Zinc | 41.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-12-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-14 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-14.176 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.31 |
| Barium | 43.4 |
| Cadmium | <1 |
| Lead | 2.00 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SS-12-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | 210248-14 x5 |
| Date Analyzed: | 11/09/22 | Data File: | 210248-14 x5.309 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 10.5 |
| Copper | 53.5 |
| Nickel | 11.5 |
| Zinc | 43.3 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/24/22 | Lab ID: | I2-748 mb |
| Date Analyzed: | 11/09/22 | Data File: | I2-748 mb.344 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <0.5 j |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248
Date Extracted: 10/27/22
Date Analyzed: 11/07/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| SS-1-0.75<br>210248-01 | <0.1 |
| SS-2-0.5<br>210248-02 | <0.1 |
| SS-3-0.5<br>210248-03 | <0.1 |
| SS-4-1.5<br>210248-06 | <0.1 |
| SS-5-0.5<br>210248-07 | <0.1 |
| SS-6-0.5<br>210248-08 | <0.1 |
| SS-7a-0.5<br>210248-09 | <0.1 |
| SS-8-0.5<br>210248-10 | <0.1 |
| SS-9-0.5<br>210248-11 | <0.1 |
| SS-10-0.5<br>210248-12 | <0.1 |
| SS-11-0.5<br>210248-13 | <0.1 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248
Date Extracted: 10/27/22
Date Analyzed: 11/07/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| SS-12-0.5<br>210248-14 | <0.1 |
| Method Blank<br>i2-748 MB | <0.1 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-1-0.75 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-01 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101923.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 79 | 128 |
| Toluene-d8 | 103 | 84 | 121 |
| 4-Bromofluorobenzene | 104 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-2-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-02 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101924.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 79 | 128 |
| Toluene-d8 | 105 | 84 | 121 |
| 4-Bromofluorobenzene | 95 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-3-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-03 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101925.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 79 | 128 |
| Toluene-d8 | 104 | 84 | 121 |
| 4-Bromofluorobenzene | 99 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-4-1.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-06 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101926.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 79 | 128 |
| Toluene-d8 | 105 | 84 | 121 |
| 4-Bromofluorobenzene | 100 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-5-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-07 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101927.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 79 | 128 |
| Toluene-d8 | 104 | 84 | 121 |
| 4-Bromofluorobenzene | 104 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-6-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-08 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101928.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 79 | 128 |
| Toluene-d8 | 104 | 84 | 121 |
| 4-Bromofluorobenzene | 101 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-7a-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-09 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101929.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 79 | 128 |
| Toluene-d8 | 105 | 84 | 121 |
| 4-Bromofluorobenzene | 101 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-8-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-10 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101930.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 106 | 79 | 128 |
| Toluene-d8 | 105 | 84 | 121 |
| 4-Bromofluorobenzene | 97 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-9-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-11 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101931.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 79 | 128 |
| Toluene-d8 | 104 | 84 | 121 |
| 4-Bromofluorobenzene | 101 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | 0.26 lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-10-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-12 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101932.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 79 | 128 |
| Toluene-d8 | 103 | 84 | 121 |
| 4-Bromofluorobenzene | 100 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-11-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-13 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101933.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 79 | 128 |
| Toluene-d8 | 102 | 84 | 121 |
| 4-Bromofluorobenzene | 102 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | 0.21 lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-12-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-14 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101934.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 108 | 79 | 128 |
| Toluene-d8 | 102 | 84 | 121 |
| 4-Bromofluorobenzene | 102 | 84 | 116 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 02-2487 mb 1/0.25 |
| Date Analyzed: | 10/19/22 | Data File: | 101908.D |
| Matrix: | Soil | Instrument: | GCMS11 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 78 | 126 |
| Toluene-d8 | 99 | 84 | 115 |
| 4-Bromofluorobenzene | 92 | 72 | 130 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.005 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-1-0.75 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-01 |
| Date Analyzed: | 10/19/22 | Data File: | 101911.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 72 | 16 | 137 |
| 2-Fluorobiphenyl | 78 | 46 | 122 |
| 2,4,6-Tribromophenol | 99 | 17 | 154 |
| Terphenyl-d14 | 90 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-2-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-02 |
| Date Analyzed: | 10/19/22 | Data File: | 101912.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 60 | 16 | 137 |
| 2-Fluorobiphenyl | 72 | 46 | 122 |
| 2,4,6-Tribromophenol | 97 | 17 | 154 |
| Terphenyl-d14 | 84 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-3-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-03 |
| Date Analyzed: | 10/19/22 | Data File: | 101913.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 50 | 16 | 137 |
| 2-Fluorobiphenyl | 62 | 46 | 122 |
| 2,4,6-Tribromophenol | 84 | 17 | 154 |
| Terphenyl-d14 | 75 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-4-1.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-06 |
| Date Analyzed: | 10/19/22 | Data File: | 101914.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 63 | 16 | 137 |
| 2-Fluorobiphenyl | 76 | 46 | 122 |
| 2,4,6-Tribromophenol | 100 | 17 | 154 |
| Terphenyl-d14 | 87 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-5-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-07 |
| Date Analyzed: | 10/19/22 | Data File: | 101915.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 60 | 16 | 137 |
| 2-Fluorobiphenyl | 74 | 46 | 122 |
| 2,4,6-Tribromophenol | 98 | 17 | 154 |
| Terphenyl-d14 | 85 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-6-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-08 |
| Date Analyzed: | 10/19/22 | Data File: | 101916.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 63 | 16 | 137 |
| 2-Fluorobiphenyl | 73 | 46 | 122 |
| 2,4,6-Tribromophenol | 94 | 17 | 154 |
| Terphenyl-d14 | 80 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-7a-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-09 |
| Date Analyzed: | 10/19/22 | Data File: | 101917.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 75 | 16 | 137 |
| 2-Fluorobiphenyl | 76 | 46 | 122 |
| 2,4,6-Tribromophenol | 101 | 17 | 154 |
| Terphenyl-d14 | 85 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-8-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-10 |
| Date Analyzed: | 10/19/22 | Data File: | 101920.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 56 | 16 | 137 |
| 2-Fluorobiphenyl | 70 | 46 | 122 |
| 2,4,6-Tribromophenol | 92 | 17 | 154 |
| Terphenyl-d14 | 85 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | 0.0054 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.0033 |
| Phenanthrene | 0.0066 |
| Anthracene | 0.0038 |
| Fluoranthene | <0.002 |
| Pyrene | 0.011 |
| Benz(a)anthracene | 0.0028 |
| Chrysene | 0.0085 |
| Benzo(a)pyrene | 0.0044 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | 0.0021 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-9-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-11 |
| Date Analyzed: | 10/19/22 | Data File: | 101921.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 50 | 16 | 137 |
| 2-Fluorobiphenyl | 64 | 46 | 122 |
| 2,4,6-Tribromophenol | 94 | 17 | 154 |
| Terphenyl-d14 | 88 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | 0.0025 |
| Phenanthrene | 0.0094 |
| Anthracene | 0.0035 |
| Fluoranthene | 0.0021 |
| Pyrene | 0.019 |
| Benz(a)anthracene | 0.0035 |
| Chrysene | 0.011 |
| Benzo(a)pyrene | 0.0066 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | 0.0027 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-10-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-12 1/10 |
| Date Analyzed: | 10/19/22 | Data File: | 101922.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 49 d | 16 | 137 |
| 2-Fluorobiphenyl | 64 d | 46 | 122 |
| 2,4,6-Tribromophenol | 78 d | 17 | 154 |
| Terphenyl-d14 | 82 d | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.02 |
| 2-Methylnaphthalene | <0.02 |
| 1-Methylnaphthalene | <0.02 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | 0.057 |
| Benz(a)anthracene | <0.02 |
| Chrysene | 0.048 |
| Benzo(a)pyrene | 0.036 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.02 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-11-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-13 |
| Date Analyzed: | 10/19/22 | Data File: | 101918.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 74 | 16 | 137 |
| 2-Fluorobiphenyl | 77 | 46 | 122 |
| 2,4,6-Tribromophenol | 96 | 17 | 154 |
| Terphenyl-d14 | 88 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SS-12-0.5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/18/22 | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 210248-14 |
| Date Analyzed: | 10/19/22 | Data File: | 101919.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 71 | 16 | 137 |
| 2-Fluorobiphenyl | 73 | 46 | 122 |
| 2,4,6-Tribromophenol | 98 | 17 | 154 |
| Terphenyl-d14 | 87 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001-001 |
| Date Extracted: | 10/19/22 | Lab ID: | 02-2544 mb |
| Date Analyzed: | 10/19/22 | Data File: | 101910.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 89 | 16 | 137 |
| 2-Fluorobiphenyl | 88 | 46 | 122 |
| 2,4,6-Tribromophenol | 101 | 17 | 154 |
| Terphenyl-d14 | 96 | 31 | 167 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 210237-01 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 115 | 71-131 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 210248-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 84 | 88 | 73-135 | 5 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 86 | 74-139 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 210248-01 x5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | <5 | 96 | 95 | 75-125 | 1 |
| Barium | mg/kg (ppm) | 50 | 20.4 | 102 | 93 | 75-125 | 9 |
| Cadmium | mg/kg (ppm) | 10 | <5 | 97 | 96 | 75-125 | 1 |
| Chromium | mg/kg (ppm) | 50 | 5.36 | 89 | 89 | 75-125 | 0 |
| Copper | mg/kg (ppm) | 50 | 25.7 | 98 | 90 | 75-125 | 9 |
| Lead | mg/kg (ppm) | 50 | <5 | 99 | 98 | 75-125 | 1 |
| Nickel | mg/kg (ppm) | 25 | 5.42 | 95 | 88 | 75-125 | 8 |
| Selenium | mg/kg (ppm) | 5 | <5 | 69 vo | 74 vo | 75-125 | 7 |
| Silver | mg/kg (ppm) | 10 | <5 | 99 | 100 | 75-125 | 1 |
| Zinc | mg/kg (ppm) | 50 | 28.2 | 91 | 89 | 75-125 | 2 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 90 | 80-120 |
| Barium | mg/kg (ppm) | 50 | 97 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 97 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 106 | 80-120 |
| Copper | mg/kg (ppm) | 50 | 103 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 101 | 80-120 |
| Nickel | mg/kg (ppm) | 25 | 103 | 80-120 |
| Selenium | mg/kg (ppm) | 5 | 97 | 80-120 |
| Silver | mg/kg (ppm) | 10 | 97 | 80-120 |
| Zinc | mg/kg (ppm) | 50 | 101 | 80-120 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 210248-01 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 5 | 0.23 | 98 | 99 | 71-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 5 | 95 | 68-125 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 210253-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | <0.5 | 26 | 25 | 10-142 | 4 |
| Chloromethane | mg/kg (ppm) | 1 | <0.5 | 50 | 51 | 10-126 | 2 |
| Vinyl chloride | mg/kg (ppm) | 1 | <0.05 | 50 | 50 | 10-138 | 0 |
| Bromomethane | mg/kg (ppm) | 1 | <0.5 | 61 | 55 | 10-163 | 10 |
| Chloroethane | mg/kg (ppm) | 1 | <0.5 | 53 | 54 | 10-176 | 2 |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | <0.5 | 55 | 57 | 10-176 | 4 |
| Acetone | mg/kg (ppm) | 5 | <5 | 92 | 80 | 10-163 | 14 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 64 | 65 | 10-160 | 2 |
| Hexane | mg/kg (ppm) | 1 | <0.25 | 50 | 49 | 10-137 | 2 |
| Methylene chloride | mg/kg (ppm) | 1 | <0.5 | 74 | 74 | 10-156 | 0 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | <0.05 | 81 | 82 | 21-145 | 1 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 72 | 75 | 14-137 | 4 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | <0.05 | 77 | 77 | 19-140 | 0 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 100 | 103 | 10-158 | 3 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 82 | 82 | 25-135 | 0 |
| Chloroform | mg/kg (ppm) | 1 | <0.05 | 75 | 76 | 21-145 | 1 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | <1 | 92 | 84 | 19-147 | 9 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | <0.05 | 81 | 79 | 12-160 | 2 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | <0.05 | 76 | 77 | 10-156 | 1 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 79 | 79 | 17-140 | 0 |
| Carbon tetrachloride | mg/kg (ppm) | 1 | <0.05 | 82 | 84 | 9-164 | 2 |
| Benzene | mg/kg (ppm) | 1 | 0.44 | 30 b | 30 b | 29-129 | 0 b |
| Trichloroethene | mg/kg (ppm) | 1 | <0.02 | 70 | 71 | 21-139 | 1 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 87 | 83 | 30-135 | 5 |
| Bromodichloromethane | mg/kg (ppm) | 1 | <0.05 | 80 | 79 | 23-155 | 1 |
| Dibromomethane | mg/kg (ppm) | 1 | <0.05 | 84 | 83 | 23-145 | 1 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | <1 | 90 | 86 | 24-155 | 5 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 87 | 83 | 28-144 | 5 |
| Toluene | mg/kg (ppm) | 1 | <0.05 | 88 | 84 | 35-130 | 5 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 92 | 87 | 26-149 | 6 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | <0.05 | 93 | 88 | 10-205 | 6 |
| 2-Hexanone | mg/kg (ppm) | 5 | <0.5 | 96 | 89 | 15-166 | 8 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 92 | 89 | 31-137 | 3 |
| Tetrachloroethene | mg/kg (ppm) | 1 | <0.025 | 87 | 85 | 20-133 | 2 |
| Dibromochloromethane | mg/kg (ppm) | 1 | <0.05 | 85 | 82 | 28-150 | 4 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | <0.05 | 92 | 86 | 28-142 | 7 |
| Chlorobenzene | mg/kg (ppm) | 1 | <0.05 | 91 | 89 | 32-129 | 2 |
| Ethylbenzene | mg/kg (ppm) | 1 | 0.063 | 83 | 81 | 32-137 | 2 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | <0.05 | 88 | 91 | 31-143 | 3 |
| m,p-Xylene | mg/kg (ppm) | 2 | <0.1 | 86 | 84 | 34-136 | 2 |
| o-Xylene | mg/kg (ppm) | 1 | <0.05 | 90 | 89 | 33-134 | 1 |
| Styrene | mg/kg (ppm) | 1 | <0.05 | 90 | 87 | 35-137 | 3 |
| Isopropylbenzene | mg/kg (ppm) | 1 | <0.05 | 86 | 85 | 31-142 | 1 |
| Bromoform | mg/kg (ppm) | 1 | <0.05 | 89 | 85 | 21-156 | 5 |
| n-Propylbenzene | mg/kg (ppm) | 1 | <0.05 | 89 | 87 | 23-146 | 2 |
| Bromobenzene | mg/kg (ppm) | 1 | <0.05 | 91 | 89 | 34-130 | 2 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | <0.05 | 88 | 87 | 18-149 | 1 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | <0.05 | 117 | 112 | 28-140 | 4 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | <0.05 | 101 | 95 | 25-144 | 6 |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | <0.05 | 93 | 91 | 31-134 | 2 |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | <0.05 | 90 | 88 | 31-136 | 2 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | <0.05 | 87 | 87 | 30-137 | 0 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | <0.05 | 86 | 85 | 10-182 | 1 |
| sec-Butylbenzene | mg/kg (ppm) | 1 | <0.05 | 86 | 84 | 23-145 | 2 |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | <0.05 | 87 | 85 | 21-149 | 2 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 89 | 88 | 30-131 | 1 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 89 | 87 | 29-129 | 2 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 90 | 88 | 31-132 | 2 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | <0.5 | 90 | 87 | 11-161 | 3 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | <0.25 | 87 | 87 | 22-142 | 0 |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | <0.25 | 85 | 82 | 10-142 | 4 |
| Naphthalene | mg/kg (ppm) | 1 | <0.05 | 89 | 91 | 14-157 | 2 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | <0.25 | 87 | 87 | 20-144 | 0 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | 71 | 10-146 |
| Chloromethane | mg/kg (ppm) | 1 | 81 | 27-133 |
| Vinyl chloride | mg/kg (ppm) | 1 | 87 | 22-139 |
| Bromomethane | mg/kg (ppm) | 1 | 79 | 38-114 |
| Chloroethane | mg/kg (ppm) | 1 | 79 | 9-163 |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | 93 | 10-196 |
| Acetone | mg/kg (ppm) | 5 | 101 | 52-141 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | 94 | 47-128 |
| Hexane | mg/kg (ppm) | 1 | 92 | 43-142 |
| Methylene chloride | mg/kg (ppm) | 1 | 95 | 10-184 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | 99 | 60-123 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | 96 | 67-129 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | 99 | 68-115 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | 139 | 52-170 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | 100 | 72-127 |
| Chloroform | mg/kg (ppm) | 1 | 93 | 66-120 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | 98 | 30-197 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | 95 | 56-135 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | 98 | 62-131 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | 100 | 69-128 |
| Carbon tetrachloride | mg/kg (ppm) | 1 | 106 | 60-139 |
| Benzene | mg/kg (ppm) | 1 | 97 | 71-118 |
| Trichloroethene | mg/kg (ppm) | 1 | 85 | 63-121 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | 100 | 72-127 |
| Bromodichloromethane | mg/kg (ppm) | 1 | 94 | 57-126 |
| Dibromomethane | mg/kg (ppm) | 1 | 100 | 62-123 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | 102 | 45-145 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | 100 | 67-122 |
| Toluene | mg/kg (ppm) | 1 | 103 | 66-126 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | 109 | 72-132 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | 106 | 64-115 |
| 2-Hexanone | mg/kg (ppm) | 5 | 107 | 33-152 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | 106 | 72-130 |
| Tetrachloroethene | mg/kg (ppm) | 1 | 104 | 72-114 |
| Dibromochloromethane | mg/kg (ppm) | 1 | 96 | 55-121 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | 106 | 74-132 |
| Chlorobenzene | mg/kg (ppm) | 1 | 104 | 76-111 |
| Ethylbenzene | mg/kg (ppm) | 1 | 104 | 64-123 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | 105 | 64-121 |
| m,p-Xylene | mg/kg (ppm) | 2 | 104 | 78-122 |
| o-Xylene | mg/kg (ppm) | 1 | 103 | 77-124 |
| Styrene | mg/kg (ppm) | 1 | 102 | 74-126 |
| Isopropylbenzene | mg/kg (ppm) | 1 | 99 | 76-127 |
| Bromoform | mg/kg (ppm) | 1 | 104 | 56-132 |
| n-Propylbenzene | mg/kg (ppm) | 1 | 102 | 74-124 |
| Bromobenzene | mg/kg (ppm) | 1 | 103 | 72-122 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | 103 | 76-126 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | 131 | 56-143 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | 109 | 61-137 |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | 105 | 74-121 |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | 105 | 75-122 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | 102 | 73-130 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | 103 | 76-125 |
| sec-Butylbenzene | mg/kg (ppm) | 1 | 100 | 71-130 |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | 101 | 70-132 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | 103 | 75-121 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | 102 | 74-117 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | 102 | 76-121 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | 105 | 58-138 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | 102 | 64-135 |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | 99 | 50-153 |
| Naphthalene | mg/kg (ppm) | 1 | 105 | 63-140 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | 100 | 63-138 |

Date of Report: 11/11/22
Date Received: 10/18/22
Project: Kosmos 0202832-001-001, F&BI 210248

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 210248-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.17 | <0.002 | 65 | 70 | 50-150 | 7 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.17 | <0.002 | 73 | 77 | 50-150 | 5 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.17 | <0.002 | 74 | 76 | 50-150 | 3 |
| Acenaphthylene | mg/kg (ppm) | 0.17 | <0.002 | 76 | 80 | 50-150 | 5 |
| Acenaphthene | mg/kg (ppm) | 0.17 | <0.002 | 74 | 78 | 50-150 | 5 |
| Fluorene | mg/kg (ppm) | 0.17 | <0.002 | 80 | 84 | 50-150 | 5 |
| Phenanthrene | mg/kg (ppm) | 0.17 | <0.002 | 79 | 82 | 10-170 | 4 |
| Anthracene | mg/kg (ppm) | 0.17 | <0.002 | 74 | 79 | 50-150 | 7 |
| Fluoranthene | mg/kg (ppm) | 0.17 | <0.002 | 80 | 85 | 10-203 | 6 |
| Pyrene | mg/kg (ppm) | 0.17 | <0.002 | 77 | 82 | 10-208 | 6 |
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | <0.002 | 79 | 83 | 37-146 | 5 |
| Chrysene | mg/kg (ppm) | 0.17 | <0.002 | 79 | 85 | 36-144 | 7 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | <0.002 | 76 | 84 | 40-150 | 10 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | <0.002 | 79 | 88 | 45-157 | 11 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | <0.002 | 78 | 85 | 50-150 | 9 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | <0.002 | 74 | 81 | 24-145 | 9 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | <0.002 | 73 | 83 | 31-137 | 13 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.17 | <0.002 | 71 | 81 | 14-141 | 13 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.17 | 79 | 61-102 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.17 | 84 | 62-108 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.17 | 85 | 62-108 |
| Acenaphthylene | mg/kg (ppm) | 0.17 | 86 | 61-111 |
| Acenaphthene | mg/kg (ppm) | 0.17 | 84 | 61-110 |
| Fluorene | mg/kg (ppm) | 0.17 | 89 | 62-114 |
| Phenanthrene | mg/kg (ppm) | 0.17 | 88 | 64-112 |
| Anthracene | mg/kg (ppm) | 0.17 | 86 | 63-111 |
| Fluoranthene | mg/kg (ppm) | 0.17 | 93 | 66-115 |
| Pyrene | mg/kg (ppm) | 0.17 | 85 | 65-112 |
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | 87 | 64-116 |
| Chrysene | mg/kg (ppm) | 0.17 | 89 | 66-119 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | 87 | 62-116 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | 90 | 61-118 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | 86 | 65-119 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | 86 | 64-130 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | 90 | 67-131 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.17 | 86 | 67-126 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

210248

# SAMPLE CHAIN OF CUSTODY

10/18/22

BT4 / CI3

Page # 1 of 2

Report To Angie Goodwin

Company Haley & Aldrich

Address 3131 Elliot Ave #600, Seattle

City, State, ZIP Seattle, WA, 98121

Phone 206.826.4495 Email Agoodwin@haleyaldrich.com

SAMPLERS (*signature*)

PROJECT NAME: KOSMOS

PO #: 0202832-001-001

REMARKS: Hold EPH/VPH 10/19/22 ME

Project specific RLs? - Yes / No

INVOICE TO: accountspayable@haleyaldrich.com

TURNAROUND TIME
- ☑ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | ~~NWTPH-HCID~~ CoV1 8260 | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | ~~VPH~~ NWTPH-Gx | ~~EPH~~ NWTPH-Dx | Methods: 6020/1631 | EPA 9060 TOC: SM 5310 | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS-1-0.75 | 01A-F | 10/17/22 | 1140 | S | 6 | X | X | | X | X | X | | X | X | X | X | Metals: RCRA + Cu, Ni, Zn |
| SS-2-0.5 | 02 | 10/17/22 | 1045 | S | 6 | X | X | | X | X | X | | X | X | X | X | Hold EPH/VPH |
| SS-3-0.5 | 03 | 10/17/22 | 1000 | S | 6 | X | X | | X | X | X | | X | X | X | X | per AG 10/20/22 |
| SS-4-0.5 | 04 | 10/17/22 | 1240 | S | 6 | | | | | | | | | | | | HOLD ME |
| SS-4-1.0 | 05 | 10/17/22 | 1255 | S | 6 | | | | | | | | | | | | HOLD |
| SS-4-1.5 | 06 | 10/17/22 | 1310 | S | 6 | X | X | | X | X | X | | X | X | X | X | |
| SS-5-0.5 | 07 | 10/17/22 | 1225 | S | 6 | X | X | | X | X | X | | X | X | X | X | |
| SS-6-0.5 | 08 | 10/17/22 | 1140 | S | 6 | X | X | | X | X | X | | X | X | X | X | |
| SS-7a-0.5 | 09 | 10/17/22 | 1500 | S | 6 | X | X | | X | X | X | | X | X | X | X | |
| SS-8-0.5 | 10 | 10/17/22 | 1420 | S | 6 | X | X | | X | X | X | | X | X | X | X | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Zach Stephens | Haley & Aldrich | 10/18/22 | 1405 |
| Received by: | ANHPHAM | F&B | 10/18/22 | 14:05 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 0 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

# SAMPLE CHAIN OF CUSTODY

10/18/22

BI41 CI3

Page # 1 of 2

210248

Report To Angie Goodwin

Company Haley & Aldrich

Address 3131 Elliot Ave

City, State, ZIP Seattle, WA, 98121

Phone 206.826.4495 Email Agoodwin@haleyaldrich.com

SAMPLERS (*signature*)

PROJECT NAME: Kosmos

PO #: 0202832-001-001

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☑ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | ~~NWTPH-HCID~~ Cr VI | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | ~~TPH~~ | ~~TPH~~ | Metals 6020 1631 | TOC: 9060 5310 | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS-9-0.5 | 11 A-F | 10/17/22 | 1435 | S | 6 | X | X | | X | X | X | | X | X | X | X | |
| SS-10-0.5 | 12 | 10/17/22 | 1545 | S | 6 | X | X | | X | X | X | | X | X | X | X | |
| SS-11-0.5 | 13 | 10/17/22 | 1625 | S | 6 | X | X | | X | X | X | | X | X | X | X | |
| SS-12-0.5 | 14 | 10/17/22 | 1655 | S | 6 | X | X | | X | X | X | | X | X | X | X | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Zach Stephens | Haley & Aldrich | 10/18/22 | 1405 |
| Received by: | ANH PHAN | FSB | 10/18/22 | 14:05 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 0 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 210248**
**Work Order Number: 2210299**

October 28, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 14 sample(s) on 10/19/2022 for the analyses presented in the following report.

***Hexavalent Chromium by EPA Method 7196***
***Sample Moisture (Percent Moisture)***
***Total Organic Carbon by EPA 9060***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *10/28/2022*

**CLIENT:** Friedman & Bruya
**Project:** 210248
**Work Order:** 2210299

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2210299-001 | SS-1-0.75 | 10/17/2022 11:40 AM | 10/19/2022 12:03 PM |
| 2210299-002 | SS-2-0.5 | 10/17/2022 10:45 AM | 10/19/2022 12:03 PM |
| 2210299-003 | SS-3-0.5 | 10/17/2022 10:00 AM | 10/19/2022 12:03 PM |
| 2210299-004 | SS-4-0.5 | 10/17/2022 12:40 PM | 10/19/2022 12:03 PM |
| 2210299-005 | SS-4-1.0 | 10/17/2022 12:55 PM | 10/19/2022 12:03 PM |
| 2210299-006 | SS-4-1.5 | 10/17/2022 1:10 PM | 10/19/2022 12:03 PM |
| 2210299-007 | SS-5-0.5 | 10/17/2022 12:25 PM | 10/19/2022 12:03 PM |
| 2210299-008 | SS-6-0.5 | 10/17/2022 11:40 AM | 10/19/2022 12:03 PM |
| 2210299-009 | SS-7a-0.5 | 10/17/2022 3:00 PM | 10/19/2022 12:03 PM |
| 2210299-010 | SS-8-0.5 | 10/17/2022 2:20 PM | 10/19/2022 12:03 PM |
| 2210299-011 | SS-9-0.5 | 10/17/2022 2:35 PM | 10/19/2022 12:03 PM |
| 2210299-012 | SS-10.0.5 | 10/17/2022 3:45 PM | 10/19/2022 12:03 PM |
| 2210299-013 | SS-11-0.5 | 10/17/2022 4:25 PM | 10/19/2022 12:03 PM |
| 2210299-014 | SS-12-0.5 | 10/17/2022 4:55 PM | 10/19/2022 12:03 PM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2210299**
Date: **10/28/2022**

**CLIENT:** Friedman & Bruya
**Project:** 210248

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 11:40:00 AM
**Project:** 210248
**Lab ID:** 2210299-001
**Matrix:** Soil
**Client Sample ID:** **SS-1-0.75**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 23.2 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38245 | | Analyst: ALT |
| Total Organic Carbon | 0.165 | 0.150 | | %-dry | 1 | 10/26/2022 2:40:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.639 | | mg/Kg-dry | 1 | 10/27/2022 11:43:00 AM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 10:45:00 AM
**Project:** 210248
**Lab ID:** 2210299-002
**Matrix:** Soil
**Client Sample ID:** **SS-2-0.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 17.6 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38245 | | Analyst: ALT |
| Total Organic Carbon | 0.496 | 0.150 | | %-dry | 1 | 10/26/2022 2:52:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.606 | | mg/Kg-dry | 1 | 10/27/2022 12:02:00 PM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 10:00:00 AM
**Project:** 210248
**Lab ID:** 2210299-003
**Matrix:** Soil
**Client Sample ID:** **SS-3-0.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 22.8 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38245 | | Analyst: ALT |
| Total Organic Carbon | 0.225 | 0.150 | | %-dry | 1 | 10/26/2022 3:07:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.644 | | mg/Kg-dry | 1 | 10/27/2022 12:05:00 PM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 1:10:00 PM
**Project:** 210248
**Lab ID:** 2210299-006
**Matrix:** Soil
**Client Sample ID:** **SS-4-1.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 23.9 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38245 | | Analyst: ALT |
| Total Organic Carbon | 0.508 | 0.150 | | %-dry | 1 | 10/26/2022 3:21:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.648 | | mg/Kg-dry | 1 | 10/27/2022 12:09:00 PM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 12:25:00 PM
**Project:** 210248
**Lab ID:** 2210299-007
**Matrix:** Soil
**Client Sample ID:** **SS-5-0.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 21.1 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38245 | | Analyst: ALT |
| Total Organic Carbon | 0.479 | 0.150 | | %-dry | 1 | 10/26/2022 4:22:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.634 | | mg/Kg-dry | 1 | 10/27/2022 12:20:00 PM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 11:40:00 AM
**Project:** 210248
**Lab ID:** 2210299-008
**Matrix:** Soil
**Client Sample ID:** **SS-6-0.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 19.7 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38245 | | Analyst: ALT |
| Total Organic Carbon | 1.89 | 0.150 | | %-dry | 1 | 10/26/2022 4:40:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.612 | | mg/Kg-dry | 1 | 10/27/2022 12:24:00 PM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 3:00:00 PM
**Project:** 210248
**Lab ID:** 2210299-009
**Matrix:** Soil
**Client Sample ID:** **SS-7a-0.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 23.5 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38293 | | Analyst: ALT |
| Total Organic Carbon | ND | 0.150 | | %-dry | 1 | 10/27/2022 1:52:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.643 | | mg/Kg-dry | 1 | 10/27/2022 12:41:00 PM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 2:20:00 PM
**Project:** 210248
**Lab ID:** 2210299-010
**Matrix:** Soil
**Client Sample ID:** **SS-8-0.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 23.1 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38293 | | Analyst: ALT |
| Total Organic Carbon | 0.904 | 0.150 | | %-dry | 1 | 10/27/2022 2:04:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.650 | | mg/Kg-dry | 1 | 10/27/2022 12:44:00 PM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 2:35:00 PM
**Project:** 210248
**Lab ID:** 2210299-011
**Matrix:** Soil
**Client Sample ID:** **SS-9-0.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 23.2 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38293 | | Analyst: ALT |
| Total Organic Carbon | 0.297 | 0.150 | | %-dry | 1 | 10/27/2022 2:24:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.642 | | mg/Kg-dry | 1 | 10/27/2022 12:47:00 PM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 3:45:00 PM
**Project:** 210248
**Lab ID:** 2210299-012
**Matrix:** Soil
**Client Sample ID:** **SS-10.0.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 25.9 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38293 | | Analyst: ALT |
| Total Organic Carbon | 0.433 | 0.150 | | %-dry | 1 | 10/27/2022 2:42:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.675 | | mg/Kg-dry | 1 | 10/27/2022 12:51:00 PM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 4:25:00 PM
**Project:** 210248
**Lab ID:** 2210299-013
**Matrix:** Soil
**Client Sample ID:** **SS-11-0.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 24.6 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38293 | | Analyst: ALT |
| Total Organic Carbon | ND | 0.150 | | %-dry | 1 | 10/27/2022 2:58:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.665 | | mg/Kg-dry | 1 | 10/27/2022 12:55:00 PM |

# Analytical Report

Work Order: **2210299**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/17/2022 4:55:00 PM
**Project:** 210248
**Lab ID:** 2210299-014
**Matrix:** Soil
**Client Sample ID:** **SS-12-0.5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79261 | | Analyst: ME |
| Percent Moisture | 25.4 | 0.500 | | wt% | 1 | 10/24/2022 12:19:00 PM |
| **Total Organic Carbon by EPA 9060** | | | | Batch ID: 38293 | | Analyst: ALT |
| Total Organic Carbon | 0.282 | 0.150 | | %-dry | 1 | 10/27/2022 3:12:00 PM |
| **Hexavalent Chromium by EPA Method 7196** | | | | Batch ID: 38280 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.658 | | mg/Kg-dry | 1 | 10/27/2022 12:59:00 PM |

**Work Order:** 2210299
**CLIENT:** Friedman & Bruya
**Project:** 210248

# QC SUMMARY REPORT

## Hexavalent Chromium by EPA Method 7196

| Sample ID: **MB-38280** | SampType: **MBLK** | | | Units: **mg/Kg** | | Prep Date: **10/26/2022** | | RunNo: **79363** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **38280** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1634513** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.500 | | | | | | | | | |

| Sample ID: **LCS-38280** | SampType: **LCS** | | | Units: **mg/Kg** | | Prep Date: **10/26/2022** | | RunNo: **79363** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **38280** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1634514** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 2.57 | 0.500 | 2.500 | 0 | 103 | 86.8 | 113 | | | | |

| Sample ID: **2210299-001ADUP** | SampType: **DUP** | | | Units: **mg/Kg-dry** | | Prep Date: **10/26/2022** | | RunNo: **79363** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SS-1-0.75** | Batch ID: **38280** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1634516** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.645 | | | | | | 0 | | 30 | |

| Sample ID: **2210299-001AMS** | SampType: **MS** | | | Units: **mg/Kg-dry** | | Prep Date: **10/26/2022** | | RunNo: **79363** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SS-1-0.75** | Batch ID: **38280** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1634517** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 3.05 | 0.650 | 3.250 | 0 | 94.0 | 15.4 | 154 | | | | |

| Sample ID: **2210299-001AMSD** | SampType: **MSD** | | | Units: **mg/Kg-dry** | | Prep Date: **10/26/2022** | | RunNo: **79363** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SS-1-0.75** | Batch ID: **38280** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1634518** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 3.09 | 0.649 | 3.244 | 0 | 95.3 | 15.4 | 154 | 3.054 | 1.24 | 30 | |

**Work Order:** 2210299
**CLIENT:** Friedman & Bruya
**Project:** 210248

# QC SUMMARY REPORT

## Total Organic Carbon by EPA 9060

| Sample ID: **MB-38245** | SampType: **MBLK** | | | Units: **%-dry** | | Prep Date: **10/24/2022** | | RunNo: **79407** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **38245** | | | | | Analysis Date: **10/26/2022** | | SeqNo: **1635972** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Organic Carbon | ND | 0.150 | | | | | | | | | |

| Sample ID: **LCS-38245** | SampType: **LCS** | | | Units: **%-dry** | | Prep Date: **10/24/2022** | | RunNo: **79407** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **38245** | | | | | Analysis Date: **10/26/2022** | | SeqNo: **1635973** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Organic Carbon | 1.02 | 0.150 | 1.000 | 0 | 102 | 80 | 120 | | | | |

| Sample ID: **2210299-006ADUP** | SampType: **DUP** | | | Units: **%-dry** | | Prep Date: **10/24/2022** | | RunNo: **79407** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SS-4-1.5** | Batch ID: **38245** | | | | | Analysis Date: **10/26/2022** | | SeqNo: **1635978** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Organic Carbon | 0.533 | 0.150 | | | | | | 0.5080 | 4.80 | 20 | |

| Sample ID: **2210299-006AMS** | SampType: **MS** | | | Units: **%-dry** | | Prep Date: **10/24/2022** | | RunNo: **79407** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SS-4-1.5** | Batch ID: **38245** | | | | | Analysis Date: **10/26/2022** | | SeqNo: **1635979** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Organic Carbon | 1.02 | 0.150 | 0.4973 | 0.5080 | 103 | 75 | 125 | | | | |

| Sample ID: **2210299-006AMSD** | SampType: **MSD** | | | Units: **%-dry** | | Prep Date: **10/24/2022** | | RunNo: **79407** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SS-4-1.5** | Batch ID: **38245** | | | | | Analysis Date: **10/26/2022** | | SeqNo: **1635980** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Organic Carbon | 1.06 | 0.150 | 0.4995 | 0.5080 | 110 | 75 | 125 | 1.020 | 3.75 | 20 | |

**Work Order:** 2210299
**CLIENT:** Friedman & Bruya
**Project:** 210248

# QC SUMMARY REPORT

## Total Organic Carbon by EPA 9060

| Sample ID: **MB-38293** | SampType: **MBLK** | | | Units: **%-dry** | | Prep Date: **10/27/2022** | | RunNo: **79408** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **38293** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1636002** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Organic Carbon | ND | 0.150 | | | | | | | | | |

| Sample ID: **LCS-38293** | SampType: **LCS** | | | Units: **%-dry** | | Prep Date: **10/27/2022** | | RunNo: **79408** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **38293** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1636006** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Organic Carbon | 0.990 | 0.150 | 1.000 | 0 | 99.0 | 80 | 120 | | | | |

| Sample ID: **2210299-014ADUP** | SampType: **DUP** | | | Units: **%-dry** | | Prep Date: **10/27/2022** | | RunNo: **79408** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SS-12-0.5** | Batch ID: **38293** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1636013** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Organic Carbon | 0.467 | 0.150 | | | | | | 0.2820 | 49.4 | 20 | R |

**NOTES:**
R - High RPD due to low analyte concentration. In this range, high RPDs may be expected.

| Sample ID: **2210299-014AMS** | SampType: **MS** | | | Units: **%-dry** | | Prep Date: **10/27/2022** | | RunNo: **79408** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SS-12-0.5** | Batch ID: **38293** | | | | | Analysis Date: **10/28/2022** | | SeqNo: **1636020** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Organic Carbon | 1.33 | 0.150 | 1.000 | 0.2820 | 104 | 75 | 125 | | | | |

| Sample ID: **2210299-014AMSD** | SampType: **MSD** | | | Units: **%-dry** | | Prep Date: **10/27/2022** | | RunNo: **79408** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **SS-12-0.5** | Batch ID: **38293** | | | | | Analysis Date: **10/28/2022** | | SeqNo: **1636021** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Organic Carbon | 1.56 | 0.150 | 1.000 | 0.2820 | 128 | 75 | 125 | 1.327 | 16.0 | 20 | S |

**NOTES:**
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed and recovered within range.

Fremont Analytical

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2210299 |
| Logged by: | Clare Griggs | Date Received: | 10/19/2022 12:03:00 PM |

## Chain of Custody

| | | | | |
|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | |

## Log In

| | | | | |
|---|---|---|---|---|
| 3. | Coolers are present? | Yes ☑ | No ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes ☑ | No ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes ☐ | No ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes ☑ | No ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 10. | Are samples properly preserved? | Yes ☑ | No ☐ | |
| 11. | Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes ☐ | No ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes ☑ | No ☐ | |
| 14. | Does paperwork match bottle labels? | Yes ☑ | No ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 16. | Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 17. | Were all holding times able to be met? | Yes ☑ | No ☐ | |

## Special Handling (if applicable)

| | | | | |
|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes ☐ | No ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

| Item # | Temp ºC |
|---|---|
| Sample | 3.2 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2210299

Page # 1 of 1


Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com


SUBCONTRACTER
Fremont Analytical

| PROJECT NAME/NO. | PO # |
|---|---|
| 210248 | C-406 |

REMARKS

Hold EPH

Please Email Results testing ME 10/18/22

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | EPH | VPH | TOC | Chromium VI | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS-1-0.75 | | 10/17/2022 | 1140 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-2-0.5 | | 10/17/2022 | 1045 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-3-0.5 | | 10/17/2022 | 1000 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-4-0.5 | | 10/17/2022 | 1240 | soil | 1 | | | | | | | | | | Hold |
| SS-4-1.0 | | 10/17/2022 | 1255 | soil | 1 | | | | | | | | | | Hold |
| SS-4-1.5 | | 10/17/2022 | 1310 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-5-0.5 | | 10/17/2022 | 1225 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-6-0.5 | | 10/17/2022 | 1140 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-7a-0.5 | | 10/17/2022 | 1500 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-8-0.5 | | 10/17/2022 | 1420 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-9-0.5 | | 10/17/2022 | 1435 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-10.0.5 | | 10/17/2022 | 1545 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-11-0.5 | | 10/17/2022 | 1625 | soil | 1 | ☒ | | ☒ | X | | | | | | |
| SS-12-0.5 | | 10/17/2022 | 1655 | soil | 1 | ☒ | | ☒ | X | | | | | | |


*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*


| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 10/19/22 | 0835 |
| Received by: | Clare O'Connor | Clare O'Connor | FAI | 10/19/22 | 12:03 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
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(206) 285-8282
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www.friedmanandbruya.com

November 22, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on October 24, 2022 from the Kosmos 02028, F&BI 210348 project. There are 24 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA1122R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 24, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos 02028, F&BI 210348 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 210348 -01 | B12-W |

The sample was sent to Fremont Analytical for hexavalent chromium analysis. The report is enclosed.

Phenanthrene was detected in the 8270 method blank at a level greater than one tenth the concentration detected in the sample. The data were flagged accordingly.

Several metals failed below the acceptance criteria in the 6020B matrix spike samples. The laboratory control samples met the acceptance criteria, therefore the data were likely due to sample matrix effect.

All other quality control requirements were acceptable.

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348
Date Extracted: 10/26/22
Date Analyzed: 10/26/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| B12-W<br>210348-01 | <100 | 123 |
| Method Blank<br>02-2566 MB | <100 | 92 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348
Date Extracted: 10/25/22
Date Analyzed: 10/26/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 41-152) |
|---|---|---|---|
| B12-W<br>210348-01 | <50 | <250 | 94 |
| Method Blank<br>02-2602 MB | <50 | <250 | 96 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B12-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/24/22 | Project: | Kosmos 02028, F&BI 210348 |
| Date Extracted: | 11/15/22 | Lab ID: | 210348-01 |
| Date Analyzed: | 11/17/22 | Data File: | 210348-01.219 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 02028, F&BI 210348 |
| Date Extracted: | 11/15/22 | Lab ID: | I2-798 mb2 |
| Date Analyzed: | 11/15/22 | Data File: | I2-798 mb2.045 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B12-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/24/22 | Project: | Kosmos 02028, F&BI 210348 |
| Date Extracted: | 11/15/22 | Lab ID: | 210348-01 |
| Date Analyzed: | 11/17/22 | Data File: | 210348-01.220 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 3.66 |
| Cadmium | <1 |
| Chromium | 1.15 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 1.47 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 02028, F&BI 210348 |
| Date Extracted: | 11/15/22 | Lab ID: | I2-798 mb2 |
| Date Analyzed: | 11/15/22 | Data File: | I2-798 mb2.045 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348
Date Extracted: 11/06/22
Date Analyzed: 11/08/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Dissolved Mercury |
|---|---|
| B12-W<br>210348-01 | <0.01 |
| Method Blank<br>i2-764 MB | <0.01 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348
Date Extracted: 11/06/22
Date Analyzed: 11/07/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| B12-W<br>210348-01 | <0.01 |
| Method Blank<br>i2-762 MB | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/24/22 | Project: | Kosmos 02028, F&BI 210348 |
| Date Extracted: | 10/25/22 | Lab ID: | 210348-01 |
| Date Analyzed: | 10/25/22 | Data File: | 102509.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 78 | 126 |
| Toluene-d8 | 103 | 84 | 115 |
| 4-Bromofluorobenzene | 99 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 02028, F&BI 210348 |
| Date Extracted: | 10/25/22 | Lab ID: | 02-2497 mb |
| Date Analyzed: | 10/25/22 | Data File: | 102507.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 78 | 126 |
| Toluene-d8 | 104 | 84 | 115 |
| 4-Bromofluorobenzene | 100 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/24/22 | Project: | Kosmos 02028, F&BI 210348 |
| Date Extracted: | 10/25/22 | Lab ID: | 210348-01 |
| Date Analyzed: | 10/26/22 | Data File: | 102612.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 74 | 11 | 173 |
| 2-Fluorobiphenyl | 79 | 44 | 108 |
| 2,4,6-Tribromophenol | 96 | 10 | 140 |
| Terphenyl-d14 | 97 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | 0.031 fb |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 02028, F&BI 210348 |
| Date Extracted: | 10/25/22 | Lab ID: | 02-2595 mb2 |
| Date Analyzed: | 10/26/22 | Data File: | 102606.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 78 | 11 | 173 |
| 2-Fluorobiphenyl | 79 | 44 | 108 |
| 2,4,6-Tribromophenol | 88 | 10 | 140 |
| Terphenyl-d14 | 92 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348
Date Extracted: 10/28/22
Date Analyzed: 10/31/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| B12-W<br>210348-01 | 6.8 |
| Method Blank<br>I2-774 MB | <5 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 210384-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | 180 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 119 | 69-134 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 80 | 88 | 63-142 | 10 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 211122-01 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <10 | 85 | 79 | 75-125 | 7 |
| Barium | ug/L (ppb) | 50 | 20.7 | 104 | 102 | 75-125 | 2 |
| Cadmium | ug/L (ppb) | 5 | <10 | 96 | 94 | 75-125 | 2 |
| Chromium | ug/L (ppb) | 20 | 74.8 | 92 | 80 | 75-125 | 14 |
| Copper | ug/L (ppb) | 20 | 145 | 92 | 77 | 75-125 | 18 |
| Lead | ug/L (ppb) | 10 | <10 | 96 | 94 | 75-125 | 2 |
| Mercury | ug/L (ppb) | 5 | <10 | 70 vo | 73 vo | 75-125 | 4 |
| Nickel | ug/L (ppb) | 20 | 76.2 | 98 | 87 | 75-125 | 12 |
| Selenium | ug/L (ppb) | 5 | <10 | 127 vo | 57 vo | 75-125 | 76 vo |
| Silver | ug/L (ppb) | 5 | <10 | 65 vo | 65 vo | 75-125 | 0 |
| Zinc | ug/L (ppb) | 50 | 55.4 | 91 | 82 | 75-125 | 10 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 90 | 80-120 |
| Barium | ug/L (ppb) | 50 | 93 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 95 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 98 | 80-120 |
| Copper | ug/L (ppb) | 20 | 102 | 80-120 |
| Lead | ug/L (ppb) | 10 | 99 | 80-120 |
| Mercury | ug/L (ppb) | 5 | 95 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 93 | 80-120 |
| Silver | ug/L (ppb) | 5 | 95 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 211122-01 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <10 | 85 | 79 | 75-125 | 7 |
| Barium | ug/L (ppb) | 50 | 20.7 | 104 | 102 | 75-125 | 2 |
| Cadmium | ug/L (ppb) | 5 | <10 | 96 | 94 | 75-125 | 2 |
| Chromium | ug/L (ppb) | 20 | 74.8 | 92 | 80 | 75-125 | 14 |
| Copper | ug/L (ppb) | 20 | 145 | 92 | 77 | 75-125 | 18 |
| Lead | ug/L (ppb) | 10 | <10 | 96 | 94 | 75-125 | 2 |
| Mercury | ug/L (ppb) | 5 | <10 | 70 vo | 73 vo | 75-125 | 4 |
| Nickel | ug/L (ppb) | 20 | 76.2 | 98 | 87 | 75-125 | 12 |
| Selenium | ug/L (ppb) | 5 | <10 | 127 vo | 57 vo | 75-125 | 76 vo |
| Silver | ug/L (ppb) | 5 | <10 | 65 vo | 65 vo | 75-125 | 0 |
| Zinc | ug/L (ppb) | 50 | 55.4 | 91 | 82 | 75-125 | 10 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 90 | 80-120 |
| Barium | ug/L (ppb) | 50 | 93 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 95 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 98 | 80-120 |
| Copper | ug/L (ppb) | 20 | 102 | 80-120 |
| Lead | ug/L (ppb) | 10 | 99 | 80-120 |
| Mercury | ug/L (ppb) | 5 | 95 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 93 | 80-120 |
| Silver | ug/L (ppb) | 5 | 95 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 210365-07 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 0.0013 | 106 | 101 | 71-125 | 5 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 95 | 68-125 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 210401-20 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.0008 | 93 | 92 | 71-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 97 | 68-125 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | 91 | 85 | 46-206 | 7 |
| Chloromethane | ug/L (ppb) | 10 | 102 | 96 | 70-142 | 6 |
| Vinyl chloride | ug/L (ppb) | 10 | 97 | 92 | 70-130 | 5 |
| Bromomethane | ug/L (ppb) | 10 | 100 | 98 | 56-197 | 2 |
| Chloroethane | ug/L (ppb) | 10 | 95 | 91 | 70-130 | 4 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | 91 | 85 | 70-130 | 7 |
| Acetone | ug/L (ppb) | 50 | 41 | 40 | 10-140 | 2 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | 94 | 87 | 70-130 | 8 |
| Hexane | ug/L (ppb) | 10 | 104 | 103 | 54-136 | 1 |
| Methylene chloride | ug/L (ppb) | 10 | 90 | 84 | 43-134 | 7 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | 87 | 84 | 70-130 | 4 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | 97 | 92 | 70-130 | 5 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | 89 | 87 | 70-130 | 2 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | 121 | 111 | 70-130 | 9 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | 96 | 91 | 70-130 | 5 |
| Chloroform | ug/L (ppb) | 10 | 95 | 90 | 70-130 | 5 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 71 | 69 | 17-154 | 3 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | 91 | 88 | 70-130 | 3 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | 89 | 85 | 70-130 | 5 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | 93 | 90 | 70-130 | 3 |
| Carbon tetrachloride | ug/L (ppb) | 10 | 92 | 90 | 70-130 | 2 |
| Benzene | ug/L (ppb) | 10 | 94 | 92 | 70-130 | 2 |
| Trichloroethene | ug/L (ppb) | 10 | 87 | 85 | 70-130 | 2 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | 89 | 88 | 70-130 | 1 |
| Bromodichloromethane | ug/L (ppb) | 10 | 92 | 90 | 70-130 | 2 |
| Dibromomethane | ug/L (ppb) | 10 | 98 | 93 | 70-130 | 5 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 94 | 93 | 68-130 | 1 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | 95 | 95 | 69-131 | 0 |
| Toluene | ug/L (ppb) | 10 | 91 | 88 | 70-130 | 3 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | 90 | 92 | 70-130 | 2 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | 88 | 87 | 70-130 | 1 |
| 2-Hexanone | ug/L (ppb) | 50 | 77 | 74 | 45-138 | 4 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | 91 | 90 | 70-130 | 1 |
| Tetrachloroethene | ug/L (ppb) | 10 | 94 | 91 | 70-130 | 3 |
| Dibromochloromethane | ug/L (ppb) | 10 | 91 | 87 | 60-148 | 4 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | 90 | 89 | 70-130 | 1 |
| Chlorobenzene | ug/L (ppb) | 10 | 89 | 86 | 70-130 | 3 |
| Ethylbenzene | ug/L (ppb) | 10 | 89 | 87 | 70-130 | 2 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | 86 | 81 | 70-130 | 6 |
| m,p-Xylene | ug/L (ppb) | 20 | 90 | 87 | 70-130 | 3 |
| o-Xylene | ug/L (ppb) | 10 | 87 | 84 | 70-130 | 4 |
| Styrene | ug/L (ppb) | 10 | 90 | 87 | 70-130 | 3 |
| Isopropylbenzene | ug/L (ppb) | 10 | 87 | 82 | 70-130 | 6 |
| Bromoform | ug/L (ppb) | 10 | 87 | 87 | 69-138 | 0 |
| n-Propylbenzene | ug/L (ppb) | 10 | 87 | 87 | 70-130 | 0 |
| Bromobenzene | ug/L (ppb) | 10 | 87 | 87 | 70-130 | 0 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | 86 | 85 | 70-130 | 1 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | 94 | 94 | 70-130 | 0 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | 88 | 85 | 70-130 | 3 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | 86 | 83 | 70-130 | 4 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | 87 | 85 | 70-130 | 2 |
| tert-Butylbenzene | ug/L (ppb) | 10 | 87 | 86 | 70-130 | 1 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | 85 | 83 | 70-130 | 2 |
| sec-Butylbenzene | ug/L (ppb) | 10 | 86 | 84 | 70-130 | 2 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | 87 | 85 | 70-130 | 2 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | 86 | 85 | 70-130 | 1 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | 88 | 88 | 70-130 | 0 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | 83 | 83 | 70-130 | 0 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | 84 | 83 | 70-130 | 1 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | 83 | 80 | 70-130 | 4 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | 91 | 85 | 70-130 | 7 |
| Naphthalene | ug/L (ppb) | 10 | 81 | 77 | 70-130 | 5 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | 80 | 79 | 70-130 | 1 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 5 | 80 | 83 | 62-97 | 4 |
| 2-Methylnaphthalene | ug/L (ppb) | 5 | 82 | 84 | 64-101 | 2 |
| 1-Methylnaphthalene | ug/L (ppb) | 5 | 84 | 85 | 64-93 | 1 |
| Acenaphthylene | ug/L (ppb) | 5 | 91 | 92 | 70-130 | 1 |
| Acenaphthene | ug/L (ppb) | 5 | 88 | 88 | 70-130 | 0 |
| Fluorene | ug/L (ppb) | 5 | 88 | 88 | 70-130 | 0 |
| Phenanthrene | ug/L (ppb) | 5 | 90 | 95 | 70-130 | 5 |
| Anthracene | ug/L (ppb) | 5 | 93 | 96 | 70-130 | 3 |
| Fluoranthene | ug/L (ppb) | 5 | 94 | 99 | 70-130 | 5 |
| Pyrene | ug/L (ppb) | 5 | 95 | 106 | 70-130 | 11 |
| Benz(a)anthracene | ug/L (ppb) | 5 | 94 | 97 | 70-130 | 3 |
| Chrysene | ug/L (ppb) | 5 | 96 | 98 | 70-130 | 2 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 96 | 98 | 70-130 | 2 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 92 | 98 | 70-130 | 6 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 96 | 98 | 70-130 | 2 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 101 | 101 | 70-130 | 0 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 99 | 101 | 70-130 | 2 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 5 | 99 | 102 | 70-130 | 3 |

Date of Report: 11/22/22
Date Received: 10/24/22
Project: Kosmos 02028, F&BI 210348

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| TSS | mg/L (ppm) | 20 | 102 | 102 | 35-146 | 0 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

210348

# SAMPLE CHAIN OF CUSTODY

10/24/25/22 VW2/AI3/E03

Report To Angie Goodwin

Company H&A

Address

City, State, ZIP

Phone 206-954-2549 Email agoodwin@hahnaldrich.com

SAMPLERS (*signature*) AG + ZM (NP)

PROJECT NAME: Kosmos

PO #: 02028

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

Page # 1 of 1

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total Metals | Diss Metals | Cr VI | SSI | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B12-W | 01A-P | 10/24/22 | 1400 | Water | 16 | X | X | | | X | X | | X | X | X | X | X | ⊗ - per AG 10/25/22 MC Hold EPH/VPH per AG 10/26/22 ME |

Samples received at 4 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Angie Goodwin | H&A | 10/24/22 | 1640 |
| Received by: | Michael Erdahl | FCBa | 10/24/22 | 1640 |
| Relinquished by: | Michael Erdahl | PLBa | 10/25/22 | 0700 |
| Received by: | Ann WB | FBB | 10/25/22 | 0700 |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*
(NP)

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 210348**
**Work Order Number: 2210406**

October 28, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 1 sample(s) on 10/25/2022 for the analyses presented in the following report.

***Hexavalent Chromium by SM 3500 Cr B***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *10/28/2022*

**CLIENT:** Friedman & Bruya
**Project:** 210348
**Work Order:** 2210406

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2210406-001 | B12-W | 10/24/2022 2:00 PM | 10/25/2022 8:29 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2210406**
Date: **10/28/2022**

**CLIENT:** Friedman & Bruya
**Project:** 210348

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2210406**
Date Reported: **10/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/24/2022 2:00:00 PM
**Project:** 210348
**Lab ID:** 2210406-001
**Matrix:** Water
**Client Sample ID:** **B12-W**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79290 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 10/25/2022 10:35:00 AM |

**Work Order:** 2210406
**CLIENT:** Friedman & Bruya
**Project:** 210348

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **MB-79290** | SampType: **MBLK** | Units: **mg/L** | Prep Date: **10/25/2022** | RunNo: **79290** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R79290** | | Analysis Date: **10/25/2022** | SeqNo: **1632738** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | ND | 0.0450 | | | | | | | | | |

| Sample ID: **2210406-001ADUP** | SampType: **DUP** | Units: **mg/L** | Prep Date: **10/25/2022** | RunNo: **79290** |
|---|---|---|---|---|
| Client ID: **B12-W** | Batch ID: **R79290** | | Analysis Date: **10/25/2022** | SeqNo: **1632740** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | ND | 0.0450 | | | | | | 0 | | 20 | |

| Sample ID: **2210406-001AMS** | SampType: **MS** | Units: **mg/L** | Prep Date: **10/25/2022** | RunNo: **79290** |
|---|---|---|---|---|
| Client ID: **B12-W** | Batch ID: **R79290** | | Analysis Date: **10/25/2022** | SeqNo: **1632741** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 0.263 | 0.0450 | 0.2500 | 0 | 105 | 59.4 | 125 | | | | |

| Sample ID: **2210406-001AMSD** | SampType: **MSD** | Units: **mg/L** | Prep Date: **10/25/2022** | RunNo: **79290** |
|---|---|---|---|---|
| Client ID: **B12-W** | Batch ID: **R79290** | | Analysis Date: **10/25/2022** | SeqNo: **1632742** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 0.274 | 0.0450 | 0.2500 | 0 | 109 | 59.4 | 125 | 0.2629 | 3.95 | 20 | |

| Sample ID: **LCS-79290** | SampType: **LCS** | Units: **mg/L** | Prep Date: **10/25/2022** | RunNo: **79290** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R79290** | | Analysis Date: **10/25/2022** | SeqNo: **1632747** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 0.241 | 0.0450 | 0.2500 | 0 | 96.4 | 82.2 | 115 | | | | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2210406 |
| Logged by: | Elisabeth Samoray | Date Received: | 10/25/2022 8:29:00 AM |

## Chain of Custody

| | | | | |
|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | |

## Log In

| | | | | |
|---|---|---|---|---|
| 3. | Coolers are present? | Yes ☑ | No ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes ☑ | No ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes ☐ | No ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes ☑ | No ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 10. | Are samples properly preserved? | Yes ☐ | No ☑ | |
| 11. | Was preservative added to bottles? | Yes ☑ | No ☐ | NA ☐ HCL |
| 12. | Is there headspace in the VOA vials? | Yes ☐ | No ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes ☑ | No ☐ | |
| 14. | Does paperwork match bottle labels? | Yes ☑ | No ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 16. | Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 17. | Were all holding times able to be met? | Yes ☑ | No ☐ | |

## Special Handling (if applicable)

| | | | | |
|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes ☐ | No ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

| Item # | Temp ºC |
|---|---|
| Sample 1 | 4.1 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2210406

Page # 1 of 1



Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

| PROJECT NAME/NO. | PO # |
|---|---|
| 210348 | C-424 |

REMARKS

TURNAROUND TIME
- ☒ Standard TAT
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Cr VI | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B12-W | | 10/24/22 | 1400 | $H_2O$ | 2 | | | | x | | | | | | Hold Amber for potential EPH |
| | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 10/25/2 | 0721 |
| Received by: | Clare O'Connor | Clare O'Connor | FAI | 10/25/22 | 8:29 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 29, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on October 25, 2022 from the Kosmos, F&BI 210370 project. There are 55 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA1129R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 25, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos, F&BI 210370 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 210370 -01 | B12-S1-5 |
| 210370 -02 | B12-S2-7 |
| 210370 -03 | B12-S3-15 |
| 210370 -04 | B12-S4-20 |
| 210370 -05 | B12-S5-25 |
| 210370 -06 | B12-S6-30 |
| 210370 -07 | B12-S7-35 |
| 210370 -08 | B12-S8-40 |
| 210370 -09 | B12-S9-45 |
| 210370 -10 | B12-S10-50 |
| 210370 -11 | B15-S1-5 |
| 210370 -12 | B15-S2-15 |
| 210370 -13 | B15-S3-20 |
| 210370 -14 | B15-S4-25 |
| 210370 -15 | B15-S5-30 |
| 210370 -16 | B15-S6-35 |
| 210370 -17 | B15-S7-40 |
| 210370 -18 | B15-S8-45 |
| 210370 -19 | B15-S9-50 |

The 8260D calibration standard failed the acceptance criteria for acetone. The data were flagged accordingly.

Methylene chloride was detected in the 8260D analysis of several samples. The data were flagged as due to laboratory contamination.

Chromium in the 6020B matrix spike and matrix spike duplicate failed the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

All other quality control requirements were acceptable.

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370
Date Extracted: 11/03/22
Date Analyzed: 11/03/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| B12-S1-5<br>210370-01 | <5 | 90 |
| B12-S2-7<br>210370-02 | <5 | 88 |
| B12-S3-15<br>210370-03 | <5 | 89 |
| B12-S4-20<br>210370-04 | <5 | 89 |
| B12-S10-50<br>210370-10 | <5 | 94 |
| B15-S1-5<br>210370-11 | <5 | 89 |
| B15-S2-15<br>210370-12 | <5 | 87 |
| B15-S3-20<br>210370-13 | <5 | 87 |
| B15-S4-25<br>210370-14 | <5 | 91 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370
Date Extracted: 11/03/22
Date Analyzed: 11/03/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 58-139) |
|---|---|---|
| B15-S7-40<br>210370-17 | <5 | 97 |
| Method Blank<br>02-2580 MB2 | <5 | 126 |
| Method Blank<br>02-2581 MB | <5 | 121 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370
Date Extracted: 11/03/22
Date Analyzed: 11/03/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 48-168) |
|---|---|---|---|
| B12-S1-5<br>210370-01 | <50 | <250 | 87 |
| B12-S2-7<br>210370-02 | <50 | <250 | 80 |
| B12-S3-15<br>210370-03 | <50 | <250 | 77 |
| B12-S4-20<br>210370-04 | <50 | <250 | 85 |
| B12-S10-50<br>210370-10 | <50 | <250 | 79 |
| B15-S1-5<br>210370-11 | <50 | <250 | 86 |
| B15-S2-15<br>210370-12 | <50 | <250 | 79 |
| B15-S3-20<br>210370-13 | <50 | <250 | 79 |
| B15-S4-25<br>210370-14 | <50 | <250 | 79 |
| B15-S7-40<br>210370-17 | <50 | <250 | 80 |
| Method Blank<br>02-2692 MB | <50 | <250 | 66 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B12-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-01 |
| Date Analyzed: | 11/14/22 | Data File: | 210370-01.157 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.38 |
| Barium | 126 |
| Cadmium | <1 |
| Chromium | 20.1 |
| Lead | 5.79 |
| Nickel | 18.4 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 55.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B12-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-01 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210370-01 x5.152 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Copper | 88.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B12-S2-7 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-02 |
| Date Analyzed: | 11/14/22 | Data File: | 210370-02.158 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.37 |
| Barium | 49.4 |
| Cadmium | <1 |
| Chromium | 14.6 |
| Copper | 40.9 |
| Lead | 2.24 |
| Nickel | 13.9 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 47.0 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B12-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-03 |
| Date Analyzed: | 11/14/22 | Data File: | 210370-03.159 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.82 |
| Barium | 39.3 |
| Cadmium | <1 |
| Chromium | 10.4 |
| Copper | 41.3 |
| Lead | 2.52 |
| Nickel | 9.69 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 48.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B12-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-04 |
| Date Analyzed: | 11/14/22 | Data File: | 210370-04.160 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.95 |
| Barium | 191 |
| Cadmium | <1 |
| Chromium | 5.83 |
| Copper | 27.2 |
| Lead | 1.90 |
| Nickel | 7.23 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 52.3 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B12-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-10 |
| Date Analyzed: | 11/14/22 | Data File: | 210370-10.161 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 4.62 |
| Barium | 41.0 |
| Cadmium | <1 |
| Chromium | 8.27 |
| Copper | 41.4 |
| Lead | 2.94 |
| Nickel | 7.83 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 36.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-11 |
| Date Analyzed: | 11/14/22 | Data File: | 210370-11.162 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.22 |
| Barium | 32.6 |
| Cadmium | <1 |
| Chromium | 11.5 |
| Copper | 37.1 |
| Lead | 4.58 |
| Nickel | 9.83 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 37.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-S2-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-12 |
| Date Analyzed: | 11/14/22 | Data File: | 210370-12.165 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.49 |
| Barium | 50.9 |
| Cadmium | <1 |
| Lead | 2.69 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-S2-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-12 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210370-12 x5.147 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 8.60 |
| Copper | 58.8 |
| Nickel | 8.34 |
| Zinc | 51.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-S3-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-13 |
| Date Analyzed: | 11/14/22 | Data File: | 210370-13.166 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.62 |
| Barium | 28.3 |
| Cadmium | <1 |
| Lead | 2.44 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-S3-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-13 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210370-13 x5.148 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 9.24 |
| Copper | 55.9 |
| Nickel | 9.03 |
| Zinc | 41.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-S4-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-14 |
| Date Analyzed: | 11/14/22 | Data File: | 210370-14.167 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.90 |
| Barium | 44.1 |
| Cadmium | <1 |
| Lead | 2.63 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-S4-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-14 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210370-14 x5.149 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 10.2 |
| Copper | 58.8 |
| Nickel | 15.4 |
| Zinc | 49.3 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-S7-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-17 |
| Date Analyzed: | 11/14/22 | Data File: | 210370-17.168 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 5.04 |
| Barium | 44.0 |
| Cadmium | <1 |
| Lead | 2.67 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-S7-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | 210370-17 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210370-17 x5.150 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 12.5 |
| Copper | 53.3 |
| Nickel | 11.5 |
| Zinc | 48.8 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/09/22 | Lab ID: | I2-788 mb |
| Date Analyzed: | 11/09/22 | Data File: | I2-788 mb.348 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370
Date Extracted: 11/09/22
Date Analyzed: 11/12/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| B12-S1-5<br>210370-01 | <0.1 |
| B12-S2-7<br>210370-02 | <0.1 |
| B12-S3-15<br>210370-03 | <0.1 |
| B12-S4-20<br>210370-04 | <0.1 |
| B12-S10-50<br>210370-10 | <0.1 |
| B15-S1-5<br>210370-11 | <0.1 |
| B15-S2-15<br>210370-12 | <0.1 |
| B15-S3-20<br>210370-13 | <0.1 |
| B15-S4-25<br>210370-14 | <0.1 |
| B15-S7-40<br>210370-17 | <0.1 |
| Method Blank<br>i2-788 MB | <0.1 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 210370-01 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110715.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 91 | 84 | 120 |
| Toluene-d8 | 90 | 73 | 128 |
| 4-Bromofluorobenzene | 102 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-S2-7 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 210370-02 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110716.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | 84 | 120 |
| Toluene-d8 | 91 | 73 | 128 |
| 4-Bromofluorobenzene | 100 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 210370-03 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110717.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 84 | 120 |
| Toluene-d8 | 99 | 73 | 128 |
| 4-Bromofluorobenzene | 102 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 210370-04 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110718.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 84 | 120 |
| Toluene-d8 | 100 | 73 | 128 |
| 4-Bromofluorobenzene | 101 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | 1.1 lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | 0.0014 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0018 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 210370-10 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110719.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | 84 | 120 |
| Toluene-d8 | 98 | 73 | 128 |
| 4-Bromofluorobenzene | 106 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | 0.66 lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 210370-11 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110720.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 88 | 84 | 120 |
| Toluene-d8 | 91 | 73 | 128 |
| 4-Bromofluorobenzene | 102 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0028 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-S2-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 210370-12 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110721.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 84 | 120 |
| Toluene-d8 | 95 | 73 | 128 |
| 4-Bromofluorobenzene | 99 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-S3-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 210370-13 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110722.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 106 | 84 | 120 |
| Toluene-d8 | 99 | 73 | 128 |
| 4-Bromofluorobenzene | 105 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-S4-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 210370-14 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110723.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | 84 | 120 |
| Toluene-d8 | 102 | 73 | 128 |
| 4-Bromofluorobenzene | 105 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | 0.0013 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-S7-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 210370-17 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110724.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 91 | 84 | 120 |
| Toluene-d8 | 99 | 73 | 128 |
| 4-Bromofluorobenzene | 105 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/07/22 | Lab ID: | 02-2625 mb 1/0.25 |
| Date Analyzed: | 11/07/22 | Data File: | 110714.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 93 | 84 | 120 |
| Toluene-d8 | 97 | 73 | 128 |
| 4-Bromofluorobenzene | 101 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 ca | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.5 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 210370-01 |
| Date Analyzed: | 11/09/22 | Data File: | 110842.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 78 ca | 10 | 198 |
| 2-Fluorobiphenyl | 76 | 45 | 117 |
| 2,4,6-Tribromophenol | 89 | 11 | 158 |
| Terphenyl-d14 | 96 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | 0.0029 |
| Benz(a)anthracene | <0.002 |
| Chrysene | 0.0022 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-S2-7 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 210370-02 |
| Date Analyzed: | 11/09/22 | Data File: | 110843.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 62 ca | 10 | 198 |
| 2-Fluorobiphenyl | 69 | 45 | 117 |
| 2,4,6-Tribromophenol | 100 | 11 | 158 |
| Terphenyl-d14 | 109 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 210370-03 |
| Date Analyzed: | 11/09/22 | Data File: | 110844.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 64 ca | 10 | 198 |
| 2-Fluorobiphenyl | 76 | 45 | 117 |
| 2,4,6-Tribromophenol | 98 | 11 | 158 |
| Terphenyl-d14 | 111 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 210370-04 |
| Date Analyzed: | 11/09/22 | Data File: | 110845.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 84 ca | 10 | 198 |
| 2-Fluorobiphenyl | 83 | 45 | 117 |
| 2,4,6-Tribromophenol | 92 | 11 | 158 |
| Terphenyl-d14 | 98 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | 0.0035 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | 0.0067 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | 0.0090 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | 0.0039 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B12-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 210370-10 |
| Date Analyzed: | 11/09/22 | Data File: | 110846.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 86 ca | 10 | 198 |
| 2-Fluorobiphenyl | 86 | 45 | 117 |
| 2,4,6-Tribromophenol | 106 | 11 | 158 |
| Terphenyl-d14 | 110 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 210370-11 |
| Date Analyzed: | 11/09/22 | Data File: | 110847.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 83 ca | 10 | 198 |
| 2-Fluorobiphenyl | 83 | 45 | 117 |
| 2,4,6-Tribromophenol | 96 | 11 | 158 |
| Terphenyl-d14 | 98 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-S2-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 210370-12 |
| Date Analyzed: | 11/09/22 | Data File: | 110848.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 81 ca | 10 | 198 |
| 2-Fluorobiphenyl | 81 | 45 | 117 |
| 2,4,6-Tribromophenol | 111 | 11 | 158 |
| Terphenyl-d14 | 111 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-S3-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 210370-13 |
| Date Analyzed: | 11/09/22 | Data File: | 110849.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 86 ca | 10 | 198 |
| 2-Fluorobiphenyl | 86 | 45 | 117 |
| 2,4,6-Tribromophenol | 108 | 11 | 158 |
| Terphenyl-d14 | 105 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-S4-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 210370-14 |
| Date Analyzed: | 11/09/22 | Data File: | 110850.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 86 ca | 10 | 198 |
| 2-Fluorobiphenyl | 86 | 45 | 117 |
| 2,4,6-Tribromophenol | 111 | 11 | 158 |
| Terphenyl-d14 | 108 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-S7-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 210370-17 |
| Date Analyzed: | 11/09/22 | Data File: | 110851.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 85 ca | 10 | 198 |
| 2-Fluorobiphenyl | 90 | 45 | 117 |
| 2,4,6-Tribromophenol | 108 | 11 | 158 |
| Terphenyl-d14 | 120 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 02-2688 mb 1/0.5 |
| Date Analyzed: | 11/09/22 | Data File: | 110840.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 95 ca | 10 | 198 |
| 2-Fluorobiphenyl | 97 | 45 | 117 |
| 2,4,6-Tribromophenol | 100 | 11 | 158 |
| Terphenyl-d14 | 112 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.001 |
| 2-Methylnaphthalene | <0.001 |
| 1-Methylnaphthalene | <0.001 |
| Acenaphthylene | <0.001 |
| Acenaphthene | <0.001 |
| Fluorene | <0.001 |
| Phenanthrene | <0.001 |
| Anthracene | <0.001 |
| Fluoranthene | <0.001 |
| Pyrene | <0.001 |
| Benz(a)anthracene | <0.001 |
| Chrysene | <0.001 |
| Benzo(a)pyrene | <0.001 |
| Benzo(b)fluoranthene | <0.001 |
| Benzo(k)fluoranthene | <0.001 |
| Indeno(1,2,3-cd)pyrene | <0.001 |
| Dibenz(a,h)anthracene | <0.001 |
| Benzo(g,h,i)perylene | <0.001 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210370 |
| Date Extracted: | 11/03/22 | Lab ID: | 02-2684 mb3 |
| Date Analyzed: | 11/09/22 | Data File: | 110841.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 101 ca | 10 | 198 |
| 2-Fluorobiphenyl | 101 | 45 | 117 |
| 2,4,6-Tribromophenol | 108 | 11 | 158 |
| Terphenyl-d14 | 116 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 210364-03 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1.0 | <0.5 | 21 | 23 | 10-47 | 9 |
| Chloromethane | mg/kg (ppm) | 1.0 | <0.5 | 51 | 54 | 10-88 | 6 |
| Vinyl chloride | mg/kg (ppm) | 1.0 | <0.05 | 51 | 53 | 10-79 | 4 |
| Bromomethane | mg/kg (ppm) | 1.0 | <0.5 | 81 | 83 | 10-85 | 2 |
| Chloroethane | mg/kg (ppm) | 1.0 | <0.5 | 68 | 71 | 11-106 | 4 |
| Trichlorofluoromethane | mg/kg (ppm) | 1.0 | <0.5 | 64 | 64 | 10-85 | 0 |
| Acetone | mg/kg (ppm) | 5.0 | <5 | 115 | 123 | 10-224 | 7 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1.0 | <0.05 | 72 | 74 | 11-105 | 3 |
| Hexane | mg/kg (ppm) | 1.0 | <0.25 | 58 | 60 | 10-106 | 3 |
| Methylene chloride | mg/kg (ppm) | 1.0 | <0.5 | 89 | 93 | 10-139 | 4 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1.0 | <0.05 | 105 | 111 | 18-131 | 6 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | <0.05 | 82 | 86 | 16-122 | 5 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1.0 | <0.05 | 90 | 94 | 19-125 | 4 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 106 | 114 | 10-184 | 7 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | <0.05 | 92 | 96 | 18-129 | 4 |
| Chloroform | mg/kg (ppm) | 1.0 | <0.05 | 93 | 97 | 18-126 | 4 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5.0 | <1 | 119 | 126 | 10-190 | 6 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1.0 | <0.05 | 98 | 103 | 19-138 | 5 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1.0 | <0.05 | 96 | 100 | 16-126 | 4 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1.0 | <0.05 | 93 | 95 | 19-129 | 2 |
| Carbon tetrachloride | mg/kg (ppm) | 1.0 | <0.05 | 87 | 89 | 13-125 | 2 |
| Benzene | mg/kg (ppm) | 1.0 | <0.03 | 88 | 92 | 15-129 | 4 |
| Trichloroethene | mg/kg (ppm) | 1.0 | <0.02 | 87 | 92 | 14-127 | 6 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 94 | 99 | 17-137 | 5 |
| Bromodichloromethane | mg/kg (ppm) | 1.0 | <0.05 | 99 | 102 | 24-130 | 3 |
| Dibromomethane | mg/kg (ppm) | 1.0 | <0.05 | 93 | 96 | 20-138 | 3 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5.0 | <1 | 104 | 114 | 21-139 | 9 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | <0.05 | 106 | 106 | 17-135 | 0 |
| Toluene | mg/kg (ppm) | 1.0 | <0.05 | 96 | 99 | 15-129 | 3 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | <0.05 | 108 | 110 | 18-130 | 2 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1.0 | <0.05 | 98 | 101 | 29-128 | 3 |
| 2-Hexanone | mg/kg (ppm) | 5.0 | <0.5 | 121 | 124 | 28-142 | 2 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 93 | 97 | 20-135 | 4 |
| Tetrachloroethene | mg/kg (ppm) | 1.0 | <0.025 | 99 | 102 | 20-121 | 3 |
| Dibromochloromethane | mg/kg (ppm) | 1.0 | <0.05 | 102 | 105 | 11-138 | 3 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1.0 | <0.05 | 96 | 100 | 21-130 | 4 |
| Chlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 96 | 99 | 19-129 | 3 |
| Ethylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 95 | 97 | 23-133 | 2 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | <0.05 | 97 | 102 | 16-127 | 5 |
| m,p-Xylene | mg/kg (ppm) | 2.0 | <0.1 | 95 | 98 | 19-134 | 3 |
| o-Xylene | mg/kg (ppm) | 1.0 | <0.05 | 95 | 98 | 20-132 | 3 |
| Styrene | mg/kg (ppm) | 1.0 | <0.05 | 99 | 102 | 23-127 | 3 |
| Isopropylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 99 | 102 | 21-134 | 3 |
| Bromoform | mg/kg (ppm) | 1.0 | <0.05 | 97 | 98 | 10-142 | 1 |
| n-Propylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 100 | 104 | 10-141 | 4 |
| Bromobenzene | mg/kg (ppm) | 1.0 | <0.05 | 96 | 102 | 10-135 | 6 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 101 | 106 | 20-136 | 5 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | <0.05 | 105 | 109 | 10-234 | 4 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 92 | 100 | 10-144 | 8 |
| 2-Chlorotoluene | mg/kg (ppm) | 1.0 | <0.05 | 97 | 104 | 10-139 | 7 |
| 4-Chlorotoluene | mg/kg (ppm) | 1.0 | <0.05 | 97 | 104 | 10-139 | 7 |
| tert-Butylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 97 | 104 | 10-144 | 7 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 100 | 106 | 24-133 | 6 |
| sec-Butylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 98 | 104 | 23-134 | 6 |
| p-Isopropyltoluene | mg/kg (ppm) | 1.0 | <0.05 | 100 | 106 | 25-131 | 6 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 97 | 101 | 10-143 | 4 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 96 | 102 | 10-146 | 6 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 97 | 104 | 10-144 | 7 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1.0 | <0.5 | 104 | 106 | 10-163 | 2 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1.0 | <0.25 | 95 | 104 | 10-147 | 9 |
| Hexachlorobutadiene | mg/kg (ppm) | 1.0 | <0.25 | 97 | 103 | 10-162 | 6 |
| Naphthalene | mg/kg (ppm) | 1.0 | <0.05 | 95 | 106 | 30-138 | 11 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1.0 | <0.25 | 96 | 106 | 10-173 | 10 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1.0 | 59 | 10-93 |
| Chloromethane | mg/kg (ppm) | 1.0 | 79 | 34-101 |
| Vinyl chloride | mg/kg (ppm) | 1.0 | 84 | 47-106 |
| Bromomethane | mg/kg (ppm) | 1.0 | 104 | 38-123 |
| Chloroethane | mg/kg (ppm) | 1.0 | 99 | 44-123 |
| Trichlorofluoromethane | mg/kg (ppm) | 1.0 | 106 | 56-108 |
| Acetone | mg/kg (ppm) | 5.0 | 144 | 24-185 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1.0 | 101 | 61-118 |
| Hexane | mg/kg (ppm) | 1.0 | 106 | 54-142 |
| Methylene chloride | mg/kg (ppm) | 1.0 | 116 | 10-213 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1.0 | 124 | 70-130 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | 106 | 70-130 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1.0 | 112 | 70-130 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1.0 | 139 | 45-172 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | 111 | 70-130 |
| Chloroform | mg/kg (ppm) | 1.0 | 111 | 70-130 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5.0 | 140 | 36-182 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1.0 | 117 | 66-140 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1.0 | 118 | 70-130 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1.0 | 116 | 70-130 |
| Carbon tetrachloride | mg/kg (ppm) | 1.0 | 111 | 68-146 |
| Benzene | mg/kg (ppm) | 1.0 | 106 | 70-130 |
| Trichloroethene | mg/kg (ppm) | 1.0 | 104 | 53-133 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1.0 | 113 | 67-137 |
| Bromodichloromethane | mg/kg (ppm) | 1.0 | 116 | 70-130 |
| Dibromomethane | mg/kg (ppm) | 1.0 | 104 | 70-130 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5.0 | 123 | 70-130 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | 120 | 70-130 |
| Toluene | mg/kg (ppm) | 1.0 | 115 | 63-127 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | 126 | 70-130 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1.0 | 115 | 70-130 |
| 2-Hexanone | mg/kg (ppm) | 5.0 | 140 | 65-148 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1.0 | 112 | 67-135 |
| Tetrachloroethene | mg/kg (ppm) | 1.0 | 119 | 59-138 |
| Dibromochloromethane | mg/kg (ppm) | 1.0 | 119 | 61-154 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1.0 | 114 | 70-130 |
| Chlorobenzene | mg/kg (ppm) | 1.0 | 112 | 65-133 |
| Ethylbenzene | mg/kg (ppm) | 1.0 | 111 | 60-140 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | 115 | 68-129 |
| m,p-Xylene | mg/kg (ppm) | 2.0 | 112 | 56-145 |
| o-Xylene | mg/kg (ppm) | 1.0 | 112 | 61-137 |
| Styrene | mg/kg (ppm) | 1.0 | 116 | 61-138 |
| Isopropylbenzene | mg/kg (ppm) | 1.0 | 118 | 52-148 |
| Bromoform | mg/kg (ppm) | 1.0 | 117 | 57-166 |
| n-Propylbenzene | mg/kg (ppm) | 1.0 | 118 | 36-162 |
| Bromobenzene | mg/kg (ppm) | 1.0 | 116 | 63-127 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1.0 | 120 | 43-156 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | 128 | 35-184 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1.0 | 112 | 70-130 |
| 2-Chlorotoluene | mg/kg (ppm) | 1.0 | 117 | 50-146 |
| 4-Chlorotoluene | mg/kg (ppm) | 1.0 | 115 | 47-150 |
| tert-Butylbenzene | mg/kg (ppm) | 1.0 | 117 | 41-154 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1.0 | 120 | 42-159 |
| sec-Butylbenzene | mg/kg (ppm) | 1.0 | 118 | 25-175 |
| p-Isopropyltoluene | mg/kg (ppm) | 1.0 | 121 | 18-186 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1.0 | 114 | 49-149 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1.0 | 114 | 48-149 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1.0 | 116 | 58-139 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1.0 | 122 | 70-130 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1.0 | 114 | 39-166 |
| Hexachlorobutadiene | mg/kg (ppm) | 1.0 | 115 | 41-186 |
| Naphthalene | mg/kg (ppm) | 1.0 | 115 | 67-143 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1.0 | 116 | 49-165 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 211019-01 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 115 | 71-131 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 211021-01 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 105 | 71-131 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 210370-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 92 | 90 | 73-135 | 2 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 94 | 74-139 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 210409-49 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 3.50 | 86 | 86 | 75-125 | 0 |
| Barium | mg/kg (ppm) | 50 | 44.6 | 149 b | 145 b | 75-125 | 3 |
| Cadmium | mg/kg (ppm) | 10 | <1 | 111 | 115 | 75-125 | 4 |
| Chromium | mg/kg (ppm) | 50 | 7.41 | 73 vo | 73 vo | 75-125 | 0 |
| Copper | mg/kg (ppm) | 50 | 28.6 | 78 | 74 b | 75-125 | 5 |
| Lead | mg/kg (ppm) | 50 | 2.02 | 80 | 83 | 75-125 | 4 |
| Nickel | mg/kg (ppm) | 25 | 6.56 | 73 b | 75 | 75-125 | 3 |
| Selenium | mg/kg (ppm) | 5 | <1 | 84 | 89 | 75-125 | 6 |
| Silver | mg/kg (ppm) | 10 | <1 | 79 | 82 | 75-125 | 4 |
| Zinc | mg/kg (ppm) | 50 | 31.1 | 82 | 85 | 75-125 | 4 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 95 | 80-120 |
| Barium | mg/kg (ppm) | 50 | 99 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 94 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 105 | 80-120 |
| Copper | mg/kg (ppm) | 50 | 101 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 99 | 80-120 |
| Nickel | mg/kg (ppm) | 25 | 101 | 80-120 |
| Selenium | mg/kg (ppm) | 5 | 95 | 80-120 |
| Silver | mg/kg (ppm) | 10 | 100 | 80-120 |
| Zinc | mg/kg (ppm) | 50 | 96 | 80-120 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 210409-49 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 5 | 0.14 | 117 | 113 | 71-125 | 3 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 5 | 92 | 68-125 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 79 | 69 | 61-102 | 14 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 81 | 81 | 62-108 | 0 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 81 | 82 | 62-108 | 1 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 95 | 93 | 61-111 | 2 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 92 | 92 | 61-110 | 0 |
| Fluorene | mg/kg (ppm) | 0.83 | 95 | 98 | 62-114 | 3 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 94 | 95 | 64-112 | 1 |
| Anthracene | mg/kg (ppm) | 0.83 | 94 | 91 | 63-111 | 3 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 104 | 97 | 66-115 | 7 |
| Pyrene | mg/kg (ppm) | 0.83 | 102 | 107 | 65-112 | 5 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 106 | 105 | 64-116 | 1 |
| Chrysene | mg/kg (ppm) | 0.83 | 107 | 104 | 66-119 | 3 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 99 | 98 | 62-116 | 1 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 104 | 104 | 61-118 | 0 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 104 | 105 | 65-119 | 1 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 106 | 92 | 64-130 | 14 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 111 | 96 | 67-131 | 14 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 109 | 93 | 67-126 | 16 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 210364-03 1/5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | <0.01 | 83 | 75 | 50-150 | 10 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.01 | 88 | 80 | 50-150 | 10 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.01 | 88 | 80 | 50-150 | 10 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | <0.01 | 91 | 83 | 50-150 | 9 |
| Acenaphthene | mg/kg (ppm) | 0.83 | <0.01 | 90 | 81 | 50-150 | 11 |
| Fluorene | mg/kg (ppm) | 0.83 | <0.01 | 94 | 87 | 50-150 | 8 |
| Phenanthrene | mg/kg (ppm) | 0.83 | <0.01 | 91 | 86 | 10-170 | 6 |
| Anthracene | mg/kg (ppm) | 0.83 | <0.01 | 92 | 88 | 50-150 | 4 |
| Fluoranthene | mg/kg (ppm) | 0.83 | <0.01 | 92 | 91 | 10-203 | 1 |
| Pyrene | mg/kg (ppm) | 0.83 | <0.01 | 113 | 97 | 10-208 | 15 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | <0.01 | 100 | 94 | 37-146 | 6 |
| Chrysene | mg/kg (ppm) | 0.83 | <0.01 | 98 | 95 | 36-144 | 3 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | <0.01 | 101 | 94 | 40-150 | 7 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | <0.01 | 103 | 96 | 45-157 | 7 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | <0.01 | 109 | 94 | 50-150 | 15 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | <0.01 | 85 | 89 | 24-145 | 5 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | <0.01 | 89 | 95 | 31-137 | 7 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | <0.01 | 84 | 89 | 14-141 | 6 |

Date of Report: 11/29/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210370

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 85 | 61-102 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 88 | 62-108 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 87 | 62-108 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 98 | 61-111 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 95 | 61-110 |
| Fluorene | mg/kg (ppm) | 0.83 | 96 | 62-114 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 96 | 64-112 |
| Anthracene | mg/kg (ppm) | 0.83 | 98 | 63-111 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 100 | 66-115 |
| Pyrene | mg/kg (ppm) | 0.83 | 105 | 65-112 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 104 | 64-116 |
| Chrysene | mg/kg (ppm) | 0.83 | 106 | 66-119 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 102 | 62-116 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 104 | 61-118 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 103 | 65-119 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 96 | 64-130 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 102 | 67-131 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 101 | 67-126 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

210370

# SAMPLE CHAIN OF CUSTODY

10/25/22 CI3/C04

Page # 1 of 2

Report To Angie Goodwin

Company Haley & Aldrich

Address 3131 Elliot Ave, #6000

City, State, ZIP Seattle, WA

Phone _____ Email Agoodwin@haleyaldrich.com

SAMPLERS (signature)

PROJECT NAME: Kosmos

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: accountspayable@haleyaldrich

TURNAROUND TIME
- ☒ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B12-S1-5 | 01A-F | 10/24/22 | 1000 | S | 6 | X | X | | | X | X | | X | X | | | Hold EPH/VPH per AG 10/4/22 mc |
| B12-S2-7 | 02 | 10/24/22 | 1015 | S | 6 | X | X | | | X | X | | X | X | | | |
| B12-S3-15 | 03 | 10/24/22 | 1030 | S | 6 | X | X | | | X | X | | X | X | | | |
| B12-S4-20 | 04 | 10/24/22 | 1040 | S | 6 | X | X | | | X | X | | X | X | | | |
| B12-S5-25 | 05 | 10/24/22 | 1045 | S | 6 | | | | | | | | | | | | |
| B12-S6-30 | 06 | 10/24/22 | 1100 | S | 6 | | | | | | | | | | | | |
| B12-S7-35 | 07 | 10/24/22 | 1115 | S | 6 | | | | | | | | | | | | |
| B12-S8-40 | 08 | 10/24/22 | 1125 | S | 6 | | | | | | | | | | | | |
| B12-S9-45 | 09 | 10/24/22 | 1135 | S | 6 | | | | | | | | | | | | |
| B12-S10-50 | 10 | 10/24/22 | 1145 | S | 6 | X | X | | | X | X | | X | X | | | |

ANALYSES REQUESTED

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Ben Stephens | H+A | 10/25 | 1430 |
| Received by: | VINT | FedEx | 10/25-22 | 1420 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 0 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

NP

210370

# SAMPLE CHAIN OF CUSTODY

10/25/22 CI3/C04

Report To Angie Goodwin

Company Haley & Aldrich

Address

City, State, ZIP

Phone Email

SAMPLERS (signature)

PROJECT NAME: LOSMOS

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

Page # 2 of 2

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B15-S1-5 | 11 A-F | 10/24/22 | 1240 | Soil | 5 | X | X | | | X | X | | X | X | | | |
| B15-S2-15 | 12 | | 1250 | | | X | X | | | X | X | | X | X | | | |
| B15-S3-20 | 13 | | 1305 | | | X | X | | | X | X | | X | X | | | |
| B15-S4-25 | 14 | | 1330 | | | X | X | | | X | X | | X | X | | | |
| B15-S5-30 | 15 | | 1345 | | | | | | | | | | | | | | |
| B15-S6-35 | 16 | | 1405 | | | | | | | | | | | | | | |
| B15-S7-40 | 17 | | ~~1420~~ | | | X | X | | | X | X | | X | X | | | |
| B15-S8-45 | 18 | | 1440 | | | | | | | | | | | | | | |
| B15-S9-50 | 19 | ↓ | 1450 | ↓ | ↓ | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Zach Stephens | H+A | 10/25/22 | 1430 |
| Received by: | VINH | FBI | 10-25-22 | 1420 |
| Relinquished by: | | | | |
| Received by: | | | | |

Samples received at 0 °C

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 22, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on October 25, 2022 from the Kosmos, F&BI 210371 project. There are 28 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA1122R.DOC

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 25, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Komos project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 210371 -01 | B15-W |
| 210371 -02 | B13-W |

The samples were sent to Fremont Analytical for hexavalent chromium analysis. The report is enclosed.

Several compounds in the 8270E laboratory control sample did not meet the acceptance criteria. The data were flagged accordingly.

Several metals in the 6020B and 1631E matrix spike and matrix spike duplicate did not meet the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 8260D laboratory control sample exceeded the acceptance criteria for 2,2-dichloropropane. The compound waas not detected, therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371
Date Extracted: 10/27/22
Date Analyzed: 10/27/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 51-134) |
|---|---|---|
| B15-W<br>210371-01 | <100 | 90 |
| B13-W<br>210371-02 | <100 | 88 |
| Method Blank<br>02-2566 mb | <100 | 92 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371
Date Extracted: 10/26/22
Date Analyzed: 10/26/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 41-152) |
|---|---|---|---|
| B15-W<br>210371-01 | <50 | <250 | 110 |
| B13-W<br>210371-02 | <50 | <250 | 114 |
| Method Blank<br>02-2607 MB | <50 | <250 | 117 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 11/09/22 | Lab ID: | 210371-01 |
| Date Analyzed: | 11/16/22 | Data File: | 210371-01.121 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 1.08 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B13-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 11/09/22 | Lab ID: | 210371-02 |
| Date Analyzed: | 11/16/22 | Data File: | 210371-02.122 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 1.64 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 11/09/22 | Lab ID: | I2-759 mb |
| Date Analyzed: | 11/09/22 | Data File: | I2-759 mb.256 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B15-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 11/15/22 | Lab ID: | 210371-01 |
| Date Analyzed: | 11/17/22 | Data File: | 210371-01.221 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 6.87 |
| Cadmium | <1 |
| Chromium | 2.89 |
| Copper | 3.82 |
| Lead | <1 |
| Nickel | 2.31 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 4.75 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B13-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 11/15/22 | Lab ID: | 210371-02 |
| Date Analyzed: | 11/17/22 | Data File: | 210371-02.222 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 2.89 |
| Barium | 36.5 |
| Cadmium | <1 |
| Chromium | 5.75 |
| Copper | 20.9 |
| Lead | 1.55 |
| Nickel | 6.67 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 15.3 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 11/15/22 | Lab ID: | I2-798 mb2 |
| Date Analyzed: | 11/15/22 | Data File: | I2-798 mb2.045 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371
Date Extracted: 11/06/22
Date Analyzed: 11/08/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Dissolved Mercury |
|---|---|
| B15-W<br>210371-01 | <0.01 |
| B13-W<br>210371-02 | <0.01 |
| Method Blank<br>i2-764 MB | <0.01 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371
Date Extracted: 11/06/22
Date Analyzed: 11/07/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| B15-W<br>210371-01 | <0.01 |
| B13-W<br>210371-02 | <0.01 |
| Method Blank<br>i2-763 MB | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 10/26/22 | Lab ID: | 210371-01 |
| Date Analyzed: | 10/26/22 | Data File: | 102619.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 78 | 126 |
| Toluene-d8 | 100 | 84 | 115 |
| 4-Bromofluorobenzene | 98 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | B13-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 10/26/22 | Lab ID: | 210371-02 |
| Date Analyzed: | 10/26/22 | Data File: | 102620.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 78 | 126 |
| Toluene-d8 | 102 | 84 | 115 |
| 4-Bromofluorobenzene | 97 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 10/26/22 | Lab ID: | 02-2499 mb |
| Date Analyzed: | 10/26/22 | Data File: | 102607.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 78 | 126 |
| Toluene-d8 | 100 | 84 | 115 |
| 4-Bromofluorobenzene | 93 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B15-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 10/26/22 | Lab ID: | 210371-01 |
| Date Analyzed: | 11/10/22 | Data File: | 110932.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 77 | 15 | 144 |
| 2-Fluorobiphenyl | 73 | 25 | 128 |
| 2,4,6-Tribromophenol | 87 | 10 | 142 |
| Terphenyl-d14 | 109 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 jl |
| 2-Methylnaphthalene | <0.2 jl |
| 1-Methylnaphthalene | <0.2 jl |
| Acenaphthylene | <0.02 jl |
| Acenaphthene | <0.02 jl |
| Fluorene | <0.02 jl |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B13-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/25/22 | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 10/26/22 | Lab ID: | 210371-02 |
| Date Analyzed: | 11/10/22 | Data File: | 110933.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 76 | 15 | 144 |
| 2-Fluorobiphenyl | 75 | 25 | 128 |
| 2,4,6-Tribromophenol | 88 | 10 | 142 |
| Terphenyl-d14 | 114 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 jl |
| 2-Methylnaphthalene | <0.2 jl |
| 1-Methylnaphthalene | <0.2 jl |
| Acenaphthylene | <0.02 jl |
| Acenaphthene | <0.02 jl |
| Fluorene | <0.02 jl |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210371 |
| Date Extracted: | 10/27/22 | Lab ID: | 02-2650 mb2 |
| Date Analyzed: | 10/28/22 | Data File: | 102739.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 80 | 11 | 173 |
| 2-Fluorobiphenyl | 77 | 44 | 108 |
| 2,4,6-Tribromophenol | 74 | 10 | 140 |
| Terphenyl-d14 | 84 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 jl |
| 2-Methylnaphthalene | <0.2 jl |
| 1-Methylnaphthalene | <0.2 jl |
| Acenaphthylene | <0.02 jl |
| Acenaphthene | <0.02 jl |
| Fluorene | <0.02 lj |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371
Date Extracted: 10/28/22
Date Analyzed: 10/31/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| B15-W<br>210371-01 | 22 |
| B13-W<br>210371-02 | <5 |
| Method Blank<br>I2-775 MB | <5 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 210384-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | 180 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 119 | 69-134 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 86 | 100 | 63-142 | 15 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 210371-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 90 | 89 | 75-125 | 1 |
| Barium | ug/L (ppb) | 50 | <1 | 100 | 99 | 75-125 | 1 |
| Cadmium | ug/L (ppb) | 5 | <1 | 102 | 102 | 75-125 | 0 |
| Chromium | ug/L (ppb) | 20 | <1 | 102 | 100 | 75-125 | 2 |
| Copper | ug/L (ppb) | 20 | <5 | 101 | 99 | 75-125 | 2 |
| Lead | ug/L (ppb) | 10 | <1 | 96 | 97 | 75-125 | 1 |
| Nickel | ug/L (ppb) | 20 | 1.03 | 101 | 101 | 75-125 | 0 |
| Selenium | ug/L (ppb) | 5 | <1 | 95 | 95 | 75-125 | 0 |
| Silver | ug/L (ppb) | 5 | <1 | 95 | 94 | 75-125 | 1 |
| Zinc | ug/L (ppb) | 50 | <5 | 100 | 100 | 75-125 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 91 | 80-120 |
| Barium | ug/L (ppb) | 50 | 98 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 98 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 98 | 80-120 |
| Copper | ug/L (ppb) | 20 | 101 | 80-120 |
| Lead | ug/L (ppb) | 10 | 97 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 100 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 94 | 80-120 |
| Silver | ug/L (ppb) | 5 | 96 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 98 | 80-120 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 211122-01 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <10 | 85 | 79 | 75-125 | 7 |
| Barium | ug/L (ppb) | 50 | 20.7 | 104 | 102 | 75-125 | 2 |
| Cadmium | ug/L (ppb) | 5 | <10 | 96 | 94 | 75-125 | 2 |
| Chromium | ug/L (ppb) | 20 | 74.8 | 92 | 80 | 75-125 | 14 |
| Copper | ug/L (ppb) | 20 | 145 | 92 | 77 | 75-125 | 18 |
| Lead | ug/L (ppb) | 10 | <10 | 96 | 94 | 75-125 | 2 |
| Nickel | ug/L (ppb) | 20 | 76.2 | 98 | 87 | 75-125 | 12 |
| Selenium | ug/L (ppb) | 5 | <10 | 127 vo | 57 vo | 75-125 | 76 vo |
| Silver | ug/L (ppb) | 5 | <10 | 65 vo | 65 vo | 75-125 | 0 |
| Zinc | ug/L (ppb) | 50 | 55.4 | 91 | 82 | 75-125 | 10 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 90 | 80-120 |
| Barium | ug/L (ppb) | 50 | 93 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 95 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 98 | 80-120 |
| Copper | ug/L (ppb) | 20 | 102 | 80-120 |
| Lead | ug/L (ppb) | 10 | 99 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 93 | 80-120 |
| Silver | ug/L (ppb) | 5 | 95 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 210365-07 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 0.0013 | 106 | 101 | 71-125 | 5 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 95 | 68-125 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 210371-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 0.0012 | 15 vo | 65 vo | 71-125 | 125 vo |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 97 | 68-125 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | 104 | 95 | 46-206 | 9 |
| Chloromethane | ug/L (ppb) | 10 | 113 | 109 | 70-142 | 4 |
| Vinyl chloride | ug/L (ppb) | 10 | 108 | 103 | 70-130 | 5 |
| Bromomethane | ug/L (ppb) | 10 | 113 | 110 | 56-197 | 3 |
| Chloroethane | ug/L (ppb) | 10 | 109 | 102 | 70-130 | 7 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | 105 | 99 | 70-130 | 6 |
| Acetone | ug/L (ppb) | 50 | 46 | 43 | 10-140 | 7 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | 103 | 98 | 70-130 | 5 |
| Hexane | ug/L (ppb) | 10 | 111 | 113 | 54-136 | 2 |
| Methylene chloride | ug/L (ppb) | 10 | 99 | 97 | 43-134 | 2 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | 100 | 93 | 70-130 | 7 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | 108 | 103 | 70-130 | 5 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | 102 | 98 | 70-130 | 4 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | 135 vo | 128 | 70-130 | 5 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | 107 | 103 | 70-130 | 4 |
| Chloroform | ug/L (ppb) | 10 | 108 | 103 | 70-130 | 5 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 66 | 66 | 17-154 | 0 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | 99 | 97 | 70-130 | 2 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | 100 | 96 | 70-130 | 4 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | 101 | 99 | 70-130 | 2 |
| Carbon tetrachloride | ug/L (ppb) | 10 | 104 | 103 | 70-130 | 1 |
| Benzene | ug/L (ppb) | 10 | 103 | 100 | 70-130 | 3 |
| Trichloroethene | ug/L (ppb) | 10 | 96 | 93 | 70-130 | 3 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | 100 | 95 | 70-130 | 5 |
| Bromodichloromethane | ug/L (ppb) | 10 | 99 | 96 | 70-130 | 3 |
| Dibromomethane | ug/L (ppb) | 10 | 109 | 103 | 70-130 | 6 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 99 | 95 | 68-130 | 4 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | 98 | 96 | 69-131 | 2 |
| Toluene | ug/L (ppb) | 10 | 102 | 99 | 70-130 | 3 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | 102 | 97 | 70-130 | 5 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | 98 | 96 | 70-130 | 2 |
| 2-Hexanone | ug/L (ppb) | 50 | 84 | 81 | 45-138 | 4 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | 103 | 98 | 70-130 | 5 |
| Tetrachloroethene | ug/L (ppb) | 10 | 106 | 103 | 70-130 | 3 |
| Dibromochloromethane | ug/L (ppb) | 10 | 99 | 99 | 60-148 | 0 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | 99 | 98 | 70-130 | 1 |
| Chlorobenzene | ug/L (ppb) | 10 | 96 | 96 | 70-130 | 0 |
| Ethylbenzene | ug/L (ppb) | 10 | 101 | 98 | 70-130 | 3 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | 98 | 95 | 70-130 | 3 |
| m,p-Xylene | ug/L (ppb) | 20 | 102 | 98 | 70-130 | 4 |
| o-Xylene | ug/L (ppb) | 10 | 100 | 96 | 70-130 | 4 |
| Styrene | ug/L (ppb) | 10 | 99 | 94 | 70-130 | 5 |
| Isopropylbenzene | ug/L (ppb) | 10 | 98 | 97 | 70-130 | 1 |
| Bromoform | ug/L (ppb) | 10 | 96 | 93 | 69-138 | 3 |
| n-Propylbenzene | ug/L (ppb) | 10 | 96 | 97 | 70-130 | 1 |
| Bromobenzene | ug/L (ppb) | 10 | 93 | 92 | 70-130 | 1 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | 95 | 95 | 70-130 | 0 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | 102 | 105 | 70-130 | 3 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | 94 | 92 | 70-130 | 2 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | 93 | 95 | 70-130 | 2 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | 96 | 95 | 70-130 | 1 |
| tert-Butylbenzene | ug/L (ppb) | 10 | 97 | 98 | 70-130 | 1 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | 95 | 95 | 70-130 | 0 |
| sec-Butylbenzene | ug/L (ppb) | 10 | 95 | 97 | 70-130 | 2 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | 98 | 97 | 70-130 | 1 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | 97 | 95 | 70-130 | 2 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | 98 | 97 | 70-130 | 1 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | 94 | 94 | 70-130 | 0 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | 94 | 91 | 70-130 | 3 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | 95 | 96 | 70-130 | 1 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | 100 | 103 | 70-130 | 3 |
| Naphthalene | ug/L (ppb) | 10 | 92 | 92 | 70-130 | 0 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | 94 | 92 | 70-130 | 2 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 2.5 | 57 vo | 66 | 62-97 | 15 |
| 2-Methylnaphthalene | ug/L (ppb) | 2.5 | 61 vo | 67 | 64-101 | 9 |
| 1-Methylnaphthalene | ug/L (ppb) | 2.5 | 61 vo | 68 | 64-93 | 11 |
| Acenaphthylene | ug/L (ppb) | 2.5 | 65 vo | 76 | 70-130 | 16 |
| Acenaphthene | ug/L (ppb) | 2.5 | 68 vo | 74 | 70-130 | 8 |
| Fluorene | ug/L (ppb) | 2.5 | 68 vo | 75 | 70-130 | 10 |
| Phenanthrene | ug/L (ppb) | 2.5 | 71 | 77 | 70-130 | 8 |
| Anthracene | ug/L (ppb) | 2.5 | 72 | 81 | 70-130 | 12 |
| Fluoranthene | ug/L (ppb) | 2.5 | 79 | 87 | 70-130 | 10 |
| Pyrene | ug/L (ppb) | 2.5 | 78 | 83 | 70-130 | 6 |
| Benz(a)anthracene | ug/L (ppb) | 2.5 | 76 | 83 | 70-130 | 9 |
| Chrysene | ug/L (ppb) | 2.5 | 77 | 85 | 70-130 | 10 |
| Benzo(a)pyrene | ug/L (ppb) | 2.5 | 78 | 85 | 70-130 | 9 |
| Benzo(b)fluoranthene | ug/L (ppb) | 2.5 | 76 | 84 | 70-130 | 10 |
| Benzo(k)fluoranthene | ug/L (ppb) | 2.5 | 80 | 87 | 70-130 | 8 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 2.5 | 81 | 84 | 70-130 | 4 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 2.5 | 79 | 86 | 70-130 | 8 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 2.5 | 78 | 85 | 70-130 | 9 |

Date of Report: 11/22/22
Date Received: 10/25/22
Project: Kosmos, F&BI 210371

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| TSS | mg/L (ppm) | 20 | 94 | 96 | 35-146 | 2 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

# SAMPLE CHAIN OF CUSTODY

210371

10/25/22

VW3/EW3/AI2

Page # 1 of 1

Report To Angie Goodwin

Company Haley & Aldrich

Address 3131 Elliot Ave #600

City, State, ZIP Seattle, WA,

Phone _____ Email Agoodwin@haley aldrich

SAMPLERS (*signature*)

PROJECT NAME: KOSMOS

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: accounts payable

TURNAROUND TIME
- ☑ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | ~~PCBs EPA 8082~~ TSS | ~~Arsenic~~ Chromium | ~~Metals 6020~~ | ~~TPH-Dx with SGC~~ | ~~TPH-Dx with SGC~~ | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B15-W | 01 A-P | 10/24/22 | 1600 | W | 16 | X | X | | | X | X | X | X | X | X | X | Hexchrom on short hold time |
| B13-W | 02 A-P | 10/25/22 | 1200 | W | 16 | X | X | | | X | X | X | X | X | X | X | Hold EDH/VPH per AG 10/27/22 ME |
| | | | | | | | | | | | | | | | | | |
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| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Zach Stephens | H+A | 10/25/22 | 1430 |
| Received by: | VINH | FBI | 10-25-22 | 1420 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 0 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282* NP

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 22, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on October 26, 2022 from the Kosmos, F&BI 210408 project. There are 35 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA1122R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 26, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos, F&BI 210408 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 210408 -01 | B17-W |
| 210408 -02 | B16-W |
| 210408 -03 | B14-W |

The samples were sent to Fremont Analytical for hexavalent chromium and EPH. The reports are enclosed.

Several compounds in the 8270E laboratory control sample failed the acceptance criteria. The data were flagged accordingly.

Several metals in the 6020B and 1631E matrix spike and matrix spike duplicate did not meet the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 8260D laboratory control sample and laboratory control sample duplicate exceeded the acceptance criteria for 2,2-dichloropropane. The compound was not detected, therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408
Date Extracted: 10/27/22
Date Analyzed: 10/27/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 51-134) |
|---|---|---|
| B17-W<br>210408-01 | <100 | 88 |
| B16-W<br>210408-02 | <100 | 88 |
| B14-W<br>210408-03 | <100 | 90 |
| Method Blank<br>02-2571 mb | <100 | 91 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408
Date Extracted: 10/27/22
Date Analyzed: 10/27/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 41-152) |
|---|---|---|---|
| B17-W<br>210408-01 | 130 x | <250 | 116 |
| B16-W<br>210408-02 | 62 x | <250 | 116 |
| B14-W<br>210408-03 | 78 x | <250 | 120 |
| Method Blank<br>02-2607 MB2 | <50 | <250 | 113 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 11/15/22 | Lab ID: | 210408-01 |
| Date Analyzed: | 11/17/22 | Data File: | 210408-01.224 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 4.67 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | 3.25 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 1.67 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 3.96 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B16-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 11/15/22 | Lab ID: | 210408-02 |
| Date Analyzed: | 11/17/22 | Data File: | 210408-02.225 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 1.36 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 11/15/22 | Lab ID: | 210408-03 |
| Date Analyzed: | 11/17/22 | Data File: | 210408-03.226 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 2.39 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 11/15/22 | Lab ID: | I2-798 mb2 |
| Date Analyzed: | 11/15/22 | Data File: | I2-798 mb2.045 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 11/15/22 | Lab ID: | 210408-01 |
| Date Analyzed: | 11/17/22 | Data File: | 210408-01.227 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 3.27 |
| Barium | 39.4 |
| Cadmium | <1 |
| Lead | 2.17 |
| Mercury | <1 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 11/15/22 | Lab ID: | 210408-01 x5 |
| Date Analyzed: | 11/20/22 | Data File: | 210408-01 x5.091 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | 6.15 |
| Copper | 34.5 |
| Nickel | 7.08 |
| Zinc | 22.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B16-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 11/15/22 | Lab ID: | 210408-02 |
| Date Analyzed: | 11/17/22 | Data File: | 210408-02.228 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 2.78 |
| Barium | 18.3 |
| Cadmium | <1 |
| Chromium | 3.15 |
| Copper | 14.4 |
| Lead | 1.18 |
| Mercury | <1 |
| Nickel | 3.84 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 8.93 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 11/15/22 | Lab ID: | 210408-03 |
| Date Analyzed: | 11/17/22 | Data File: | 210408-03.257 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 1.22 |
| Barium | 11.0 |
| Cadmium | <1 |
| Chromium | 22.1 |
| Copper | 8.65 |
| Lead | 1.37 |
| Mercury | <1 |
| Nickel | 14.9 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 11/15/22 | Lab ID: | 210408-03 |
| Date Analyzed: | 11/18/22 | Data File: | 210408-03.058 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Zinc | 9.72 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 11/15/22 | Lab ID: | I2-798 mb2 |
| Date Analyzed: | 11/15/22 | Data File: | I2-798 mb2.045 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408
Date Extracted: 11/06/22
Date Analyzed: 11/08/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Dissolved Mercury |
|---|---|
| B17-W<br>210408-01 | <0.01 |
| B16-W<br>210408-02 | <0.01 |
| B14-W<br>210408-03 | <0.01 |
| Method Blank<br>i2-764 MB | <0.01 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408
Date Extracted: 11/06/22
Date Analyzed: 11/07/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| B17-W<br>210408-01 | <0.01 |
| B16-W<br>210408-02 | 0.022 |
| B14-W<br>210408-03 | <0.01 |
| Method Blank<br>i2-763 MB | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 10/28/22 | Lab ID: | 210408-01 |
| Date Analyzed: | 10/28/22 | Data File: | 102834.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 78 | 126 |
| Toluene-d8 | 101 | 84 | 115 |
| 4-Bromofluorobenzene | 102 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 10/28/22 | Lab ID: | 210408-02 |
| Date Analyzed: | 10/28/22 | Data File: | 102835.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 78 | 126 |
| Toluene-d8 | 102 | 84 | 115 |
| 4-Bromofluorobenzene | 99 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | B14-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 10/28/22 | Lab ID: | 210408-03 |
| Date Analyzed: | 10/28/22 | Data File: | 102836.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 78 | 126 |
| Toluene-d8 | 100 | 84 | 115 |
| 4-Bromofluorobenzene | 98 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | 1.9 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 10/28/22 | Lab ID: | 02-2615 mb |
| Date Analyzed: | 10/28/22 | Data File: | 102833.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 110 | 78 | 126 |
| Toluene-d8 | 100 | 84 | 115 |
| 4-Bromofluorobenzene | 97 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 10/27/22 | Lab ID: | 210408-01 |
| Date Analyzed: | 10/31/22 | Data File: | 103108.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 68 | 11 | 173 |
| 2-Fluorobiphenyl | 71 | 44 | 108 |
| 2,4,6-Tribromophenol | 94 | 10 | 140 |
| Terphenyl-d14 | 92 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 jl |
| 2-Methylnaphthalene | <0.2 jl |
| 1-Methylnaphthalene | <0.2 jl |
| Acenaphthylene | <0.02 jl |
| Acenaphthene | <0.02 jl |
| Fluorene | <0.02 jl |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 10/27/22 | Lab ID: | 210408-02 |
| Date Analyzed: | 10/31/22 | Data File: | 103109.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 75 | 11 | 173 |
| 2-Fluorobiphenyl | 75 | 44 | 108 |
| 2,4,6-Tribromophenol | 93 | 10 | 140 |
| Terphenyl-d14 | 98 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 jl |
| 2-Methylnaphthalene | <0.2 jl |
| 1-Methylnaphthalene | <0.2 jl |
| Acenaphthylene | <0.02 jl |
| Acenaphthene | <0.02 jl |
| Fluorene | <0.02 jl |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B14-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 10/27/22 | Lab ID: | 210408-03 |
| Date Analyzed: | 10/31/22 | Data File: | 103110.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 75 | 11 | 173 |
| 2-Fluorobiphenyl | 81 | 44 | 108 |
| 2,4,6-Tribromophenol | 94 | 10 | 140 |
| Terphenyl-d14 | 102 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 jl |
| 2-Methylnaphthalene | <0.2 jl |
| 1-Methylnaphthalene | <0.2 jl |
| Acenaphthylene | <0.02 jl |
| Acenaphthene | <0.02 jl |
| Fluorene | <0.02 jl |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210408 |
| Date Extracted: | 10/27/22 | Lab ID: | 02-2650 mb2 |
| Date Analyzed: | 10/28/22 | Data File: | 102739.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 80 | 11 | 173 |
| 2-Fluorobiphenyl | 77 | 44 | 108 |
| 2,4,6-Tribromophenol | 74 | 10 | 140 |
| Terphenyl-d14 | 84 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 jl |
| 2-Methylnaphthalene | <0.2 jl |
| 1-Methylnaphthalene | <0.2 jl |
| Acenaphthylene | <0.02 jl |
| Acenaphthene | <0.02 jl |
| Fluorene | <0.02 jl |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408
Date Extracted: 10/28/22
Date Analyzed: 10/31/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL SUSPENDED SOLIDS
BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| B17-W<br>210408-01 | 250 |
| B16-W<br>210408-02 | 76 |
| B14-W<br>210408-03 | 29 |
| Method Blank<br>I2-775 MB | <5 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 210408-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 115 | 69-134 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 86 | 100 | 63-142 | 15 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 211122-01 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <10 | 85 | 79 | 75-125 | 7 |
| Barium | ug/L (ppb) | 50 | 20.7 | 104 | 102 | 75-125 | 2 |
| Cadmium | ug/L (ppb) | 5 | <10 | 96 | 94 | 75-125 | 2 |
| Chromium | ug/L (ppb) | 20 | 74.8 | 92 | 80 | 75-125 | 14 |
| Copper | ug/L (ppb) | 20 | 145 | 92 | 77 | 75-125 | 18 |
| Lead | ug/L (ppb) | 10 | <10 | 96 | 94 | 75-125 | 2 |
| Mercury | ug/L (ppb) | 5 | <10 | 70 vo | 73 vo | 75-125 | 4 |
| Nickel | ug/L (ppb) | 20 | 76.2 | 98 | 87 | 75-125 | 12 |
| Selenium | ug/L (ppb) | 5 | <10 | 127 vo | 57 vo | 75-125 | 76 vo |
| Silver | ug/L (ppb) | 5 | <10 | 65 vo | 65 vo | 75-125 | 0 |
| Zinc | ug/L (ppb) | 50 | 55.4 | 91 | 82 | 75-125 | 10 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 90 | 80-120 |
| Barium | ug/L (ppb) | 50 | 93 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 95 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 98 | 80-120 |
| Copper | ug/L (ppb) | 20 | 102 | 80-120 |
| Lead | ug/L (ppb) | 10 | 99 | 80-120 |
| Mercury | ug/L (ppb) | 5 | 95 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 93 | 80-120 |
| Silver | ug/L (ppb) | 5 | 95 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 211122-01 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <10 | 85 | 79 | 75-125 | 7 |
| Barium | ug/L (ppb) | 50 | 20.7 | 104 | 102 | 75-125 | 2 |
| Cadmium | ug/L (ppb) | 5 | <10 | 96 | 94 | 75-125 | 2 |
| Chromium | ug/L (ppb) | 20 | 74.8 | 92 | 80 | 75-125 | 14 |
| Copper | ug/L (ppb) | 20 | 145 | 92 | 77 | 75-125 | 18 |
| Lead | ug/L (ppb) | 10 | <10 | 96 | 94 | 75-125 | 2 |
| Mercury | ug/L (ppb) | 5 | <10 | 70 vo | 73 vo | 75-125 | 4 |
| Nickel | ug/L (ppb) | 20 | 76.2 | 98 | 87 | 75-125 | 12 |
| Selenium | ug/L (ppb) | 5 | <10 | 127 vo | 57 vo | 75-125 | 76 vo |
| Silver | ug/L (ppb) | 5 | <10 | 65 vo | 65 vo | 75-125 | 0 |
| Zinc | ug/L (ppb) | 50 | 55.4 | 91 | 82 | 75-125 | 10 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 90 | 80-120 |
| Barium | ug/L (ppb) | 50 | 93 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 95 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 98 | 80-120 |
| Copper | ug/L (ppb) | 20 | 102 | 80-120 |
| Lead | ug/L (ppb) | 10 | 99 | 80-120 |
| Mercury | ug/L (ppb) | 5 | 95 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 93 | 80-120 |
| Silver | ug/L (ppb) | 5 | 95 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 210365-07 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 0.0013 | 106 | 101 | 71-125 | 5 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 95 | 68-125 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 210371-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 0.0012 | 15 vo | 65 vo | 71-125 | 125 vo |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 97 | 68-125 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 210408-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | <1 | 136 | 50-150 |
| Chloromethane | ug/L (ppb) | 10 | <10 | 123 | 50-150 |
| Vinyl chloride | ug/L (ppb) | 10 | <0.02 | 117 | 50-150 |
| Bromomethane | ug/L (ppb) | 10 | <5 | 121 | 50-150 |
| Chloroethane | ug/L (ppb) | 10 | <1 | 109 | 50-150 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | <1 | 108 | 50-150 |
| Acetone | ug/L (ppb) | 50 | <50 | 50 | 50-150 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | <1 | 56 | 50-150 |
| Hexane | ug/L (ppb) | 10 | <5 | 134 | 50-150 |
| Methylene chloride | ug/L (ppb) | 10 | <5 | 89 | 50-150 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 83 | 50-150 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | <1 | 83 | 50-150 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 117 | 50-150 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 93 | 50-150 |
| Chloroform | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | <20 | 69 | 50-150 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | <0.2 | 95 | 50-150 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | <1 | 88 | 50-150 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | <1 | 88 | 50-150 |
| Carbon tetrachloride | ug/L (ppb) | 10 | <0.5 | 90 | 50-150 |
| Benzene | ug/L (ppb) | 10 | <0.35 | 92 | 50-150 |
| Trichloroethene | ug/L (ppb) | 10 | <0.5 | 92 | 50-150 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| Bromodichloromethane | ug/L (ppb) | 10 | <0.5 | 103 | 50-150 |
| Dibromomethane | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | <10 | 99 | 50-150 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 101 | 50-150 |
| Toluene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 104 | 50-150 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | <0.5 | 102 | 50-150 |
| 2-Hexanone | ug/L (ppb) | 50 | <10 | 86 | 50-150 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Tetrachloroethene | ug/L (ppb) | 10 | <1 | 107 | 50-150 |
| Dibromochloromethane | ug/L (ppb) | 10 | <0.5 | 105 | 50-150 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Chlorobenzene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Ethylbenzene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| m,p-Xylene | ug/L (ppb) | 20 | <2 | 103 | 50-150 |
| o-Xylene | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| Styrene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Isopropylbenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| Bromoform | ug/L (ppb) | 10 | <5 | 97 | 50-150 |
| n-Propylbenzene | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| Bromobenzene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | <0.2 | 113 | 50-150 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| tert-Butylbenzene | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| sec-Butylbenzene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | <10 | 100 | 50-150 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | <0.5 | 115 | 50-150 |
| Naphthalene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | 101 | 95 | 46-206 | 6 |
| Chloromethane | ug/L (ppb) | 10 | 113 | 108 | 70-142 | 5 |
| Vinyl chloride | ug/L (ppb) | 10 | 108 | 105 | 70-130 | 3 |
| Bromomethane | ug/L (ppb) | 10 | 114 | 110 | 56-197 | 4 |
| Chloroethane | ug/L (ppb) | 10 | 110 | 105 | 70-130 | 5 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | 107 | 106 | 70-130 | 1 |
| Acetone | ug/L (ppb) | 50 | 46 | 47 | 10-140 | 2 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | 106 | 106 | 70-130 | 0 |
| Hexane | ug/L (ppb) | 10 | 129 | 128 | 54-136 | 1 |
| Methylene chloride | ug/L (ppb) | 10 | 114 | 113 | 43-134 | 1 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | 101 | 97 | 70-130 | 4 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | 111 | 108 | 70-130 | 3 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | 105 | 103 | 70-130 | 2 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | 139 vo | 141 vo | 70-130 | 1 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | 107 | 105 | 70-130 | 2 |
| Chloroform | ug/L (ppb) | 10 | 106 | 108 | 70-130 | 2 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 75 | 76 | 17-154 | 1 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | 100 | 101 | 70-130 | 1 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | 104 | 102 | 70-130 | 2 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | 106 | 104 | 70-130 | 2 |
| Carbon tetrachloride | ug/L (ppb) | 10 | 105 | 104 | 70-130 | 1 |
| Benzene | ug/L (ppb) | 10 | 104 | 105 | 70-130 | 1 |
| Trichloroethene | ug/L (ppb) | 10 | 98 | 99 | 70-130 | 1 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | 102 | 100 | 70-130 | 2 |
| Bromodichloromethane | ug/L (ppb) | 10 | 104 | 105 | 70-130 | 1 |
| Dibromomethane | ug/L (ppb) | 10 | 103 | 105 | 70-130 | 2 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 100 | 100 | 68-130 | 0 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | 104 | 107 | 69-131 | 3 |
| Toluene | ug/L (ppb) | 10 | 105 | 107 | 70-130 | 2 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | 103 | 109 | 70-130 | 6 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | 101 | 103 | 70-130 | 2 |
| 2-Hexanone | ug/L (ppb) | 50 | 85 | 88 | 45-138 | 3 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | 107 | 108 | 70-130 | 1 |
| Tetrachloroethene | ug/L (ppb) | 10 | 111 | 112 | 70-130 | 1 |
| Dibromochloromethane | ug/L (ppb) | 10 | 109 | 108 | 60-148 | 1 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | 102 | 105 | 70-130 | 3 |
| Chlorobenzene | ug/L (ppb) | 10 | 104 | 103 | 70-130 | 1 |
| Ethylbenzene | ug/L (ppb) | 10 | 105 | 105 | 70-130 | 0 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | 101 | 102 | 70-130 | 1 |
| m,p-Xylene | ug/L (ppb) | 20 | 104 | 105 | 70-130 | 1 |
| o-Xylene | ug/L (ppb) | 10 | 103 | 103 | 70-130 | 0 |
| Styrene | ug/L (ppb) | 10 | 103 | 104 | 70-130 | 1 |
| Isopropylbenzene | ug/L (ppb) | 10 | 107 | 105 | 70-130 | 2 |
| Bromoform | ug/L (ppb) | 10 | 100 | 100 | 69-138 | 0 |
| n-Propylbenzene | ug/L (ppb) | 10 | 103 | 105 | 70-130 | 2 |
| Bromobenzene | ug/L (ppb) | 10 | 99 | 102 | 70-130 | 3 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | 104 | 104 | 70-130 | 0 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | 114 | 113 | 70-130 | 1 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | 97 | 99 | 70-130 | 2 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | 99 | 100 | 70-130 | 1 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | 102 | 103 | 70-130 | 1 |
| tert-Butylbenzene | ug/L (ppb) | 10 | 101 | 107 | 70-130 | 6 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | 102 | 103 | 70-130 | 1 |
| sec-Butylbenzene | ug/L (ppb) | 10 | 102 | 105 | 70-130 | 3 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | 103 | 106 | 70-130 | 3 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | 103 | 103 | 70-130 | 0 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | 103 | 106 | 70-130 | 3 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | 102 | 102 | 70-130 | 0 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | 98 | 100 | 70-130 | 2 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | 102 | 105 | 70-130 | 3 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | 110 | 111 | 70-130 | 1 |
| Naphthalene | ug/L (ppb) | 10 | 100 | 100 | 70-130 | 0 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | 101 | 103 | 70-130 | 2 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 5 | 57 vo | 66 | 62-97 | 15 |
| 2-Methylnaphthalene | ug/L (ppb) | 5 | 61 vo | 67 | 64-101 | 9 |
| 1-Methylnaphthalene | ug/L (ppb) | 5 | 61 vo | 68 | 64-93 | 11 |
| Acenaphthylene | ug/L (ppb) | 5 | 65 vo | 76 | 70-130 | 16 |
| Acenaphthene | ug/L (ppb) | 5 | 68 vo | 74 | 70-130 | 8 |
| Fluorene | ug/L (ppb) | 5 | 68 vo | 75 | 70-130 | 10 |
| Phenanthrene | ug/L (ppb) | 5 | 71 | 77 | 70-130 | 8 |
| Anthracene | ug/L (ppb) | 5 | 72 | 81 | 70-130 | 12 |
| Fluoranthene | ug/L (ppb) | 5 | 79 | 87 | 70-130 | 10 |
| Pyrene | ug/L (ppb) | 5 | 78 | 83 | 70-130 | 6 |
| Benz(a)anthracene | ug/L (ppb) | 5 | 76 | 83 | 70-130 | 9 |
| Chrysene | ug/L (ppb) | 5 | 77 | 85 | 70-130 | 10 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 78 | 85 | 70-130 | 9 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 76 | 84 | 70-130 | 10 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 80 | 87 | 70-130 | 8 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 81 | 84 | 70-130 | 4 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 79 | 86 | 70-130 | 8 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 5 | 78 | 85 | 70-130 | 9 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210408

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| TSS | mg/L (ppm) | 20 | 94 | 96 | 35-146 | 2 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

210408

# SAMPLE CHAIN OF CUSTODY

10/26/22

EDH/AI2/VW2

Page # 1 of 1

Report To Angie Goodwin

Company Haley & Aldrich

Address 3131 Elliot Ave #600

City, State, ZIP Seattle, WA

Phone _____ Email Agoodwin@haleyaldrich.com

SAMPLERS (*signature*)

PROJECT NAME: KOSMOS

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: accounts payable@haleyaldrich.com

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | ~~TSS 2540 PCBs EPA 8082~~ | Chrom VI 7196 | Metals 6020 | ~~NWTPH~~ | NWEPH | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B17-W | 01 A-P | 10/26/22 | 0930 | W | 16 | X | X | | | X | X | X | X | X | X | X | short hold |
| B16-W | 02 | 10/26/22 | 1330 | W | 16 | X | X | | | X | X | X | X | X | X | X | time for |
| B14-W | 03 | 10/26/22 | 1130 | W | 16 | X | X | | | X | X | X | X | X | X | X | chrom VI |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | Hold VPH - |
| | | | | | | | | | | | | | | | | | Grain Analyze |
| | | | | | | | | | | | | | | | | | EPH per AG |
| | | | | | | | | | | | | | | | | | 10/28/22 MC |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Nakahara | to H&A | 10/26 | 1845 |
| Received by: | BISRAT TADESSE | FBI | 10/26 | 1845 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

WP

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 201408**
**Work Order Number: 2210513**

November 16, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 3 sample(s) on 10/27/2022 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***
***Hexavalent Chromium by SM 3500 Cr B***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *11/16/2022*

**CLIENT:** Friedman & Bruya
**Project:** 201408
**Work Order:** 2210513

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2210513-001 | B17-W | 10/26/2022 9:30 AM | 10/27/2022 8:30 AM |
| 2210513-002 | B16-W | 10/26/2022 1:30 PM | 10/27/2022 8:30 AM |
| 2210513-003 | B14-W | 10/26/2022 11:30 AM | 10/27/2022 8:30 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2210513**
Date: **11/16/2022**

**CLIENT:** Friedman & Bruya
**Project:** 201408

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

11/16/22: Revision 1 includes additional analysis requested by the client.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2210513**
Date Reported: **11/16/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/26/2022 9:30:00 AM
**Project:** 201408
**Lab ID:** 2210513-001
**Matrix:** Water
**Client Sample ID:** **B17-W**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38350 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 82.2 | | µg/L | 1 | 11/11/2022 9:22:02 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 41.1 | | µg/L | 1 | 11/11/2022 9:22:02 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 41.1 | | µg/L | 1 | 11/11/2022 9:22:02 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 41.1 | | µg/L | 1 | 11/11/2022 9:22:02 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 41.1 | | µg/L | 1 | 11/11/2022 9:22:02 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 82.2 | | µg/L | 1 | 11/14/2022 9:58:38 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 41.1 | Q | µg/L | 1 | 11/14/2022 9:58:38 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 41.1 | | µg/L | 1 | 11/14/2022 9:58:38 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 41.1 | | µg/L | 1 | 11/14/2022 9:58:38 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 41.1 | | µg/L | 1 | 11/14/2022 9:58:38 AM |
| Surr: 1-Chlorooctadecane | 6.20 | 50 - 150 | S | %Rec | 1 | 11/11/2022 9:22:02 AM |
| Surr: o-Terphenyl | 61.4 | 50 - 150 | | %Rec | 1 | 11/14/2022 9:58:38 AM |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.
Q - Associated calibration verification is below acceptance criteria (76%, nominal 80-120). Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79352 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 10/27/2022 9:00:00 AM |

# Analytical Report

Work Order: **2210513**
Date Reported: **11/16/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/26/2022 1:30:00 PM
**Project:** 201408
**Lab ID:** 2210513-002
**Matrix:** Water
**Client Sample ID:** **B16-W**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38350 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.7 | | µg/L | 1 | 11/11/2022 10:31:10 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.9 | | µg/L | 1 | 11/11/2022 10:31:10 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.9 | | µg/L | 1 | 11/11/2022 10:31:10 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.9 | | µg/L | 1 | 11/11/2022 10:31:10 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.9 | | µg/L | 1 | 11/11/2022 10:31:10 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.7 | | µg/L | 1 | 11/14/2022 10:44:37 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.9 | Q | µg/L | 1 | 11/14/2022 10:44:37 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.9 | | µg/L | 1 | 11/14/2022 10:44:37 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.9 | | µg/L | 1 | 11/14/2022 10:44:37 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.9 | | µg/L | 1 | 11/14/2022 10:44:37 AM |
| Surr: 1-Chlorooctadecane | 9.70 | 50 - 150 | S | %Rec | 1 | 11/11/2022 10:31:10 AM |
| Surr: o-Terphenyl | 105 | 50 - 150 | | %Rec | 1 | 11/14/2022 10:44:37 AM |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.
Q - Associated calibration verification is below acceptance criteria (76%, nominal 80-120). Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79352 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 10/27/2022 9:05:00 AM |

# Analytical Report

Work Order: **2210513**
Date Reported: **11/16/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/26/2022 11:30:00 AM
**Project:** 201408
**Lab ID:** 2210513-003
**Matrix:** Water
**Client Sample ID:** **B14-W**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38350 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.7 | | µg/L | 1 | 11/11/2022 11:29:40 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.9 | | µg/L | 1 | 11/11/2022 11:29:40 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.9 | | µg/L | 1 | 11/11/2022 11:29:40 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.9 | | µg/L | 1 | 11/11/2022 11:29:40 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.9 | | µg/L | 1 | 11/11/2022 11:29:40 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.7 | | µg/L | 1 | 11/14/2022 11:07:33 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.9 | Q | µg/L | 1 | 11/14/2022 11:07:33 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.9 | | µg/L | 1 | 11/14/2022 11:07:33 AM |
| Aromatic Hydrocarbon (C16-C21) | 45.5 | 39.9 | | µg/L | 1 | 11/14/2022 11:07:33 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.9 | | µg/L | 1 | 11/14/2022 11:07:33 AM |
| Surr: 1-Chlorooctadecane | 9.36 | 50 - 150 | S | %Rec | 1 | 11/11/2022 11:29:40 AM |
| Surr: o-Terphenyl | 49.7 | 50 - 150 | S | %Rec | 1 | 11/14/2022 11:07:33 AM |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.
Q - Associated calibration verification is below acceptance criteria (76%, nominal 80-120). Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79352 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 10/27/2022 9:10:00 AM |

**Work Order:** 2210513
**CLIENT:** Friedman & Bruya
**Project:** 201408

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **MB-79352** | SampType: **MBLK** | | | Units: **mg/L** | | Prep Date: **10/27/2022** | | RunNo: **79352** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R79352** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1634237** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0450 | | | | | | | | | |

| Sample ID: **LCS-79352** | SampType: **LCS** | | | Units: **mg/L** | | Prep Date: **10/27/2022** | | RunNo: **79352** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R79352** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1634238** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.257 | 0.0450 | 0.2500 | 0 | 103 | 82.2 | 115 | | | | |

| Sample ID: **2210502-004BDUP** | SampType: **DUP** | | | Units: **mg/L** | | Prep Date: **10/27/2022** | | RunNo: **79352** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **R79352** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1634240** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0450 | | | | | | 0 | | 20 | |

| Sample ID: **2210502-004BMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **10/27/2022** | | RunNo: **79352** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **R79352** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1634241** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.258 | 0.0450 | 0.2500 | 0 | 103 | 59.4 | 125 | | | | |

| Sample ID: **2210502-004BMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **10/27/2022** | | RunNo: **79352** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **R79352** | | | | | Analysis Date: **10/27/2022** | | SeqNo: **1634242** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.267 | 0.0450 | 0.2500 | 0 | 107 | 59.4 | 125 | 0.2577 | 3.47 | 20 | |

**Work Order:** 2210513
**CLIENT:** Friedman & Bruya
**Project:** 201408

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **MB-38350** | SampType: **MBLK** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **38350** | | Analysis Date: **11/11/2022** | SeqNo: **1645815** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 80.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 40.0 | | 0 | 0 | | | | | | |
| Surr: 1-Chlorooctadecane | 259 | | 400.0 | | 64.8 | 50 | 150 | | | | |

| Sample ID: **LCS-38350** | SampType: **LCS** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **38350** | | Analysis Date: **11/11/2022** | SeqNo: **1645817** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 344 | 80.0 | 1,000 | 0 | 34.4 | 5.88 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 307 | 40.0 | 500.0 | 0 | 61.4 | 25.3 | 107 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 391 | 40.0 | 500.0 | 0 | 78.1 | 42.5 | 113 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 397 | 40.0 | 500.0 | 0 | 79.3 | 42.7 | 118 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 370 | 40.0 | 500.0 | 0 | 73.9 | 27.8 | 137 | | | | |
| Surr: 1-Chlorooctadecane | 302 | | 400.0 | | 75.4 | 50 | 150 | | | | |

| Sample ID: **2210513-001BMS** | SampType: **MS** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **B17-W** | Batch ID: **38350** | | Analysis Date: **11/11/2022** | SeqNo: **1645820** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 319 | 82.3 | 1,029 | 0 | 31.0 | 5 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 277 | 41.2 | 514.5 | 0 | 53.8 | 17.1 | 108 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 365 | 41.2 | 514.5 | 0 | 70.9 | 35.7 | 111 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 410 | 41.2 | 514.5 | 0 | 79.6 | 41.1 | 110 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 404 | 41.2 | 514.5 | 0 | 78.6 | 31.4 | 125 | | | | |
| Surr: 1-Chlorooctadecane | 305 | | 411.6 | | 74.0 | 50 | 150 | | | | |

**Work Order:** 2210513
**CLIENT:** Friedman & Bruya
**Project:** 201408

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **2210543-001BDUP** | SampType: **DUP** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **38350** | | Analysis Date: **11/11/2022** | SeqNo: **1645830** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 83.3 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Surr: 1-Chlorooctadecane | 36.6 | | 416.6 | | 8.78 | 50 | 150 | | 0 | | S |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.

| Sample ID: **MB-38350** | SampType: **MBLK** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **38350** | | Analysis Date: **11/14/2022** | SeqNo: **1646658** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 80.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | | | | Q |
| Aromatic Hydrocarbon (C12-C16) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 40.0 | | 0 | 0 | | | | | | |
| Surr: o-Terphenyl | 417 | | 400.0 | | 104 | 50 | 150 | | | | |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria (76%, nominal 80-120). Result may be low-biased.

| Sample ID: **2210543-001BDUP** | SampType: **DUP** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **38350** | | Analysis Date: **11/14/2022** | SeqNo: **1646665** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 83.3 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C10-C12) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | Q |
| Aromatic Hydrocarbon (C12-C16) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C16-C21) | 48.5 | 41.7 | | 0 | 0 | | | 43.41 | 11.2 | 25 | |
| Aromatic Hydrocarbon (C21-C34) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Surr: o-Terphenyl | 293 | | 416.6 | | 70.2 | 50 | 150 | | 0 | | |

**Work Order:** 2210513
**CLIENT:** Friedman & Bruya
**Project:** 201408

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **2210543-001BDUP** | SampType: **DUP** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **38350** | | Analysis Date: **11/14/2022** | SeqNo: **1646665** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|

**NOTES:**
Q - Associated calibration verification is below acceptance criteria (76%, nominal 80-120). Result may be low-biased.

| Sample ID: **LCS-38350** | SampType: **LCS** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **38350** | | Analysis Date: **11/14/2022** | SeqNo: **1646667** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 548 | 80.0 | 1,000 | 0 | 54.8 | 25.2 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 336 | 40.0 | 500.0 | 0 | 67.3 | 46.2 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 389 | 40.0 | 500.0 | 0 | 77.7 | 39.9 | 107 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 567 | 40.0 | 500.0 | 0 | 113 | 53.4 | 125 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 570 | 40.0 | 500.0 | 0 | 114 | 46.5 | 138 | | | | |
| Surr: o-Terphenyl | 388 | | 400.0 | | 97.1 | 50 | 150 | | | | |

| Sample ID: **2210513-001BMS** | SampType: **MS** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **B17-W** | Batch ID: **38350** | | Analysis Date: **11/14/2022** | SeqNo: **1646668** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 506 | 82.3 | 1,029 | 0 | 49.2 | 9.66 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 313 | 41.2 | 514.5 | 0 | 60.8 | 18 | 105 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 424 | 41.2 | 514.5 | 0 | 82.4 | 45.3 | 109 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 369 | 41.2 | 514.5 | 33.86 | 65.2 | 40.6 | 118 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 401 | 41.2 | 514.5 | 0 | 77.9 | 38.1 | 137 | | | | |
| Surr: o-Terphenyl | 284 | | 411.6 | | 69.0 | 50 | 150 | | | | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2210513 |
| Logged by: | Elisabeth Samoray | Date Received: | 10/27/2022 8:30:00 AM |

## Chain of Custody

| | | | | |
|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | |

## Log In

| | | | | |
|---|---|---|---|---|
| 3. | Coolers are present? | Yes ☑ | No ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes ☑ | No ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes ☐ | No ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes ☑ | No ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 10. | Are samples properly preserved? | Yes ☑ | No ☐ | |
| 11. | Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes ☐ | No ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes ☑ | No ☐ | |
| 14. | Does paperwork match bottle labels? | Yes ☑ | No ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 16. | Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 17. | Were all holding times able to be met? | Yes ☑ | No ☐ | |

## Special Handling (if applicable)

| | | | | |
|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes ☐ | No ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

| Item # | Temp ºC |
|---|---|
| Sample 1 | 1.3 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2210513



Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO. 201408

PO # C-375

REMARKS

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Cr VI | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B17-W | | 10/26/22 | 0930 | $H_2O$ | 2 | | | | x | | | | | | |
| B16-W | | " | 1330 | " | 2 | | | | x | | | | | | |
| B14-W | | " | 1130 | " | 2 | | | | x | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished By: | | Michael Erdahl | Friedman & Bruya | 10/27/22 | 0730 |
| Received by: | Clare O'Connor | Clare O'Connor | FAI | 10/27/22 | 8:30 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2210513



Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO. ~~210408~~ 210408

PO # C-375

REMARKS

TURNAROUND TIME
- [x] Standard TAT
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | C, VI | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B17-W | | 10/26/22 | 0930 | $H_2O$ | 2 | | X | | X | | | | | | X=run per ME 10/28/22 -cg |
| B16-W | | " | 1330 | " | 2 | | X | | X | | | | | | |
| B14-W | | " | 1130 | " | 2 | | X | | X | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished By: | | Michael Erdahl | Friedman & Bruya | 10/27/22 | 0730 |
| Received by: | Clare O'Connor | Clare O'Connor | FAI | 10/27/22 | 8:30 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 22, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on October 26, 2022 from the Kosmos, F&BI 210409 project. There are 115 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA1122R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 26, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos, F&BI 210409 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 210409 -01 | B13-S1-5 |
| 210409 -02 | B13-S2-10 |
| 210409 -03 | B13-S3-15 |
| 210409 -04 | B13-S4-20 |
| 210409 -05 | B13-S5-25 |
| 210409 -06 | B13-S6-30 |
| 210409 -07 | B13-S7-35 |
| 210409 -08 | B13-S8-40 |
| 210409 -09 | B13-S9-45 |
| 210409 -10 | B13-S10-50 |
| 210409 -11 | B17-S1-5 |
| 210409 -12 | B17-S2-7 |
| 210409 -13 | B17-S3-15 |
| 210409 -14 | B17-S4-20 |
| 210409 -15 | B17-S5-25 |
| 210409 -16 | B17-S6-30 |
| 210409 -17 | B17-S7-35 |
| 210409 -18 | B17-S8-40 |
| 210409 -19 | B17-S9-45 |
| 210409 -20 | B17-S10-50 |
| 210409 -21 | B17-S1D |
| 210409 -22 | B14-S1-5 |
| 210409 -23 | B14-S2-10 |
| 210409 -24 | B14-S3-15 |
| 210409 -25 | B14-S4-19 |
| 210409 -26 | B14-S5-25 |
| 210409 -27 | B14-S6-28 |
| 210409 -28 | B14-S7-35 |
| 210409 -29 | B14-S8-40 |
| 210409 -30 | B14-S9-45 |
| 210409 -31 | B14-S10-50 |
| 210409 -32 | B16-S1-5 |
| 210409 -33 | B16-S2-7 |
| 210409 -34 | B16-S3-15 |
| 210409 -35 | B16-S4-20 |
| 210409 -36 | B16-S5-25 |

CASE NARRATIVE (continued)

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 210409 -37 | B16-S6-30 |
| 210409 -38 | B16-S7-35 |
| 210409 -39 | B16-S8-40 |
| 210409 -40 | B16-S9-45 |
| 210409 -41 | B16-S10-50 |
| 210409 -42 | B11-S1-5 |
| 210409 -43 | B11-S2-10 |
| 210409 -44 | B11-S1D |
| 210409 -45 | B11-S3-15 |
| 210409 -46 | B11-S4-20 |
| 210409 -47 | B11-S5-25 |
| 210409 -48 | B11-S6-30 |
| 210409 -49 | B11-S7-35 |
| 210409 -50 | B11-S8-40 |
| 210409 -51 | B11-S9-45 |
| 210409 -52 | B11-S10-50 |

Samples B13-S1-5 and B11-S1D were sent to Fremont Analytical for EPH analysis. In addition, sample B11-S1D was sent to Onsite for VPH analysis. The report is enclosed.

Several metals in the 6020B matrix spike and matrix spike duplicate failed the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 8260D calibration standard failed the acceptance criteria for several analytes. The data were flagged accordingly. In addition, methylene chloride detections were qualified as due to laboratory contamination.

The 8260D laboratory control sample and laboratory control sample duplicate failed the relative percent difference for several compounds. The analytes were not detected therefore the data were acceptable.

Several compounds in the 8270E laboratory control sample and laboratory control sample duplicate failed the acceptance criteria. The data were flagged accordingly.

Benzo(b)fluoranthene in the 8270E laboratory control sample exceeded the acceptance criteria. Any associated detections were qualified accordingly.

All other quality control requirements were acceptable.

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409
Date Extracted: 11/03/22
Date Analyzed: 11/03/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| B13-S1-5<br>210409-01 | <5 | 136 |
| B13-S2-10<br>210409-02 | <5 | 125 |
| B13-S4-20<br>210409-04 | <5 | 126 |
| B13-S10-50<br>210409-10 | <5 | 124 |
| B17-S1-5<br>210409-11 | <5 | 129 |
| B17-S3-15<br>210409-13 | <5 | 128 |
| B17-S5-25<br>210409-15 | <5 | 105 |
| B17-S8-40<br>210409-18 | <5 | 125 |
| B17-S1D<br>210409-21 | <5 | 130 |
| B14-S1-5<br>210409-22 | <5 | 127 |
| B14-S2-10<br>210409-23 | <5 | 131 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409
Date Extracted: 11/03/22
Date Analyzed: 11/03/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| B14-S4-19<br>210409-25 | <5 | 127 |
| B14-S8-40<br>210409-29 | <5 | 128 |
| B16-S1-5<br>210409-32 | <5 | 124 |
| B16-S2-7<br>210409-33 | <5 | 129 |
| B16-S3-15<br>210409-34 | <5 | 133 |
| B16-S5-25<br>210409-36 | <5 | 130 |
| B16-S10-50<br>210409-41 | <5 | 133 |
| B11-S1-5<br>210409-42 | <5 | 129 |
| B11-S1D<br>210409-44 | 11 | 132 |
| B11-S3-15<br>210409-45 | <5 | 125 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409
Date Extracted: 11/03/22
Date Analyzed: 11/03/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| B11-S7-35<br>210409-49 | <5 | 128 |
| B11-S10-50<br>210409-52 | <5 | 126 |
| Method Blank<br>02-2581 MB | <5 | 121 |
| Method Blank<br>02-2583 MB | <5 | 87 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409
Date Extracted: 11/03/22
Date Analyzed: 11/03/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| B13-S1-5<br>210409-01 | 100 x | 700 | 102 |
| B13-S2-10<br>210409-02 | <50 | <250 | 100 |
| B13-S4-20<br>210409-04 | <50 | <250 | 108 |
| B13-S10-50<br>210409-10 | <50 | <250 | 100 |
| B17-S1-5<br>210409-11 | <50 | <250 | 103 |
| B17-S3-15<br>210409-13 | <50 | <250 | 106 |
| B17-S5-25<br>210409-15 | <50 | <250 | 112 |
| B17-S8-40<br>210409-18 | <50 | <250 | 102 |
| B17-S1D<br>210409-21 | <50 | <250 | 101 |
| B14-S1-5<br>210409-22 | <50 | <250 | 100 |
| B14-S2-10<br>210409-23 | <50 | <250 | 101 |
| B14-S4-19<br>210409-25 | <50 | <250 | 101 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409
Date Extracted: 11/03/22
Date Analyzed: 11/03/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| B14-S8-40<br>210409-29 | <50 | <250 | 114 |
| B16-S1-5<br>210409-32 | <50 | <250 | 109 |
| B16-S2-7<br>210409-33 | <50 | <250 | 101 |
| B16-S3-15<br>210409-34 | <50 | <250 | 100 |
| B16-S5-25<br>210409-36 | <50 | <250 | 102 |
| B16-S10-50<br>210409-41 | <50 | <250 | 101 |
| B11-S1-5<br>210409-42 | <50 | <250 | 105 |
| B11-S1D<br>210409-44 | 81 | <250 | 101 |
| B11-S3-15<br>210409-45 | <50 | <250 | 101 |
| B11-S7-35<br>210409-49 | <50 | <250 | 101 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409
Date Extracted: 11/03/22
Date Analyzed: 11/03/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 56-165) |
|---|---|---|---|
| B11-S10-50<br>210409-52 | <50 | <250 | 100 |
| Method Blank<br>02-2691 MB | <50 | <250 | 107 |
| Method Blank<br>02-2693 MB | <50 | <250 | 102 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B13-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-01 |
| Date Analyzed: | 11/15/22 | Data File: | 210409-01.162 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.68 |
| Barium | 125 |
| Cadmium | <1 |
| Lead | 24.5 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B13-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-01 x5 |
| Date Analyzed: | 11/11/22 | Data File: | 210409-01 x5.196 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 17.2 |
| Copper | 64.0 |
| Nickel | 20.0 |
| Zinc | 65.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B13-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-02 |
| Date Analyzed: | 11/15/22 | Data File: | 210409-02.163 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.80 |
| Barium | 67.1 |
| Cadmium | <1 |
| Lead | 2.36 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B13-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-02 x5 |
| Date Analyzed: | 11/15/22 | Data File: | 210409-02 x5.071 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 15.0 |
| Copper | 37.9 |
| Nickel | 11.5 |
| Zinc | 49.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B13-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-04 |
| Date Analyzed: | 11/15/22 | Data File: | 210409-04.164 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 3.00 |
| Barium | 30.7 |
| Cadmium | <1 |
| Lead | 3.12 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B13-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-04 x5 |
| Date Analyzed: | 11/15/22 | Data File: | 210409-04 x5.072 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 8.10 |
| Copper | 55.6 |
| Nickel | 5.60 |
| Zinc | 37.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B13-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-10 |
| Date Analyzed: | 11/13/22 | Data File: | 210409-10.095 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 4.57 |
| Barium | 34.1 |
| Cadmium | <1 |
| Chromium | 11.8 |
| Copper | 30.2 |
| Lead | 2.51 |
| Nickel | 8.88 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | 33.0 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-11 |
| Date Analyzed: | 11/13/22 | Data File: | 210409-11.096 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.56 |
| Barium | 123 |
| Cadmium | <1 |
| Lead | 4.86 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-11 x5 |
| Date Analyzed: | 11/21/22 | Data File: | 210409-11 x5.057 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 15.4 |
| Copper | 56.8 |
| Nickel | 14.8 |
| Zinc | 55.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-13 |
| Date Analyzed: | 11/13/22 | Data File: | 210409-13.097 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.30 |
| Barium | 47.4 |
| Cadmium | <1 |
| Lead | 2.77 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-13 x5 |
| Date Analyzed: | 11/21/22 | Data File: | 210409-13 x5.058 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 12.1 |
| Copper | 51.9 |
| Nickel | 9.40 |
| Zinc | 51.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-15 |
| Date Analyzed: | 11/13/22 | Data File: | 210409-15.098 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.39 |
| Barium | 23.0 |
| Cadmium | <1 |
| Lead | 2.16 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-15 x5 |
| Date Analyzed: | 11/21/22 | Data File: | 210409-15 x5.059 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 14.8 |
| Copper | 48.6 |
| Nickel | 13.1 |
| Zinc | 46.0 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-18 |
| Date Analyzed: | 11/13/22 | Data File: | 210409-18.099 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 5.29 |
| Barium | 50.7 |
| Cadmium | <1 |
| Lead | 2.93 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-18 x5 |
| Date Analyzed: | 11/21/22 | Data File: | 210409-18 x5.060 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 10.6 |
| Copper | 48.4 |
| Nickel | 10.0 |
| Zinc | 51.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-S1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-21 |
| Date Analyzed: | 11/13/22 | Data File: | 210409-21.102 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.73 |
| Barium | 138 |
| Cadmium | <1 |
| Lead | 4.99 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B17-S1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-21 x5 |
| Date Analyzed: | 11/21/22 | Data File: | 210409-21 x5.061 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 17.1 |
| Copper | 48.3 |
| Nickel | 17.5 |
| Zinc | 63.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-22 |
| Date Analyzed: | 11/13/22 | Data File: | 210409-22.103 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.50 |
| Barium | 116 |
| Cadmium | <1 |
| Lead | 5.67 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-22 x5 |
| Date Analyzed: | 11/21/22 | Data File: | 210409-22 x5.062 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 17.5 |
| Copper | 71.2 |
| Nickel | 15.2 |
| Zinc | 50.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-23 |
| Date Analyzed: | 11/13/22 | Data File: | 210409-23.104 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.52 |
| Barium | 37.6 |
| Cadmium | <1 |
| Lead | 2.70 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-23 x5 |
| Date Analyzed: | 11/21/22 | Data File: | 210409-23 x5.063 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 10.1 |
| Copper | 53.6 |
| Nickel | 12.0 |
| Zinc | 49.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-S4-19 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-25 |
| Date Analyzed: | 11/13/22 | Data File: | 210409-25.105 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.76 |
| Barium | 33.9 |
| Cadmium | <1 |
| Lead | 2.28 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-S4-19 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-25 x5 |
| Date Analyzed: | 11/21/22 | Data File: | 210409-25 x5.064 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 12.0 |
| Copper | 48.6 |
| Nickel | 11.2 |
| Zinc | 52.3 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-29 |
| Date Analyzed: | 11/13/22 | Data File: | 210409-29.106 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 6.23 |
| Barium | 51.2 |
| Cadmium | <1 |
| Lead | 3.45 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B14-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-29 x5 |
| Date Analyzed: | 11/21/22 | Data File: | 210409-29 x5.065 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 11.9 |
| Copper | 41.9 |
| Nickel | 9.65 |
| Zinc | 44.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B16-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-32 |
| Date Analyzed: | 11/14/22 | Data File: | 210409-32.147 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.55 |
| Barium | 177 |
| Cadmium | <1 |
| Chromium | 29.9 |
| Copper | 64.1 |
| Lead | 4.07 |
| Nickel | 21.6 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | 47.8 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B16-S2-7 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-33 |
| Date Analyzed: | 11/14/22 | Data File: | 210409-33.148 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.22 |
| Barium | 68.6 |
| Cadmium | <1 |
| Chromium | 25.4 |
| Copper | 56.1 |
| Lead | 3.00 |
| Nickel | 17.5 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | 53.0 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B16-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-34 |
| Date Analyzed: | 11/14/22 | Data File: | 210409-34.149 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.44 |
| Barium | 40.4 |
| Cadmium | <1 |
| Chromium | 12.7 |
| Copper | 45.4 |
| Lead | 2.69 |
| Nickel | 10.3 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | 52.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B16-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-36 |
| Date Analyzed: | 11/14/22 | Data File: | 210409-36.150 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.16 |
| Barium | 61.0 |
| Cadmium | <1 |
| Chromium | 10.7 |
| Copper | 41.2 |
| Lead | 2.59 |
| Nickel | 9.21 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | 50.8 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B16-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-41 |
| Date Analyzed: | 11/14/22 | Data File: | 210409-41.153 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 3.73 |
| Barium | 30.4 |
| Cadmium | <1 |
| Chromium | 8.05 |
| Copper | 34.5 |
| Lead | 2.43 |
| Nickel | 8.03 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | 38.2 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-42 |
| Date Analyzed: | 11/14/22 | Data File: | 210409-42.154 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.89 |
| Barium | 94.5 |
| Cadmium | <1 |
| Chromium | 23.3 |
| Copper | 61.6 |
| Lead | 3.14 |
| Nickel | 18.6 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | 50.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-S1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-44 |
| Date Analyzed: | 11/14/22 | Data File: | 210409-44.155 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.16 |
| Barium | 68.5 |
| Cadmium | <1 |
| Chromium | 19.5 |
| Copper | 48.8 |
| Lead | 2.73 |
| Nickel | 15.5 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | 45.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-45 |
| Date Analyzed: | 11/14/22 | Data File: | 210409-45.156 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.59 |
| Barium | 52.0 |
| Cadmium | <1 |
| Chromium | 14.1 |
| Copper | 44.3 |
| Lead | 2.54 |
| Nickel | 17.8 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | 42.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-S7-35 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-49 |
| Date Analyzed: | 11/11/22 | Data File: | 210409-49.253 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Barium | 50.7 |
| Cadmium | <1 |
| Chromium | 8.42 |
| Copper | 32.5 |
| Lead | 2.30 |
| Nickel | 7.46 |
| Selenium | <5 |
| Zinc | 35.3 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-S7-35 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-49 |
| Date Analyzed: | 11/15/22 | Data File: | 210409-49.165 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 5.01 |
| Selenium | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-52 |
| Date Analyzed: | 11/11/22 | Data File: | 210409-52.256 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Barium | 45.8 |
| Cadmium | <1 |
| Chromium | 7.23 |
| Copper | 30.1 |
| Lead | 2.21 |
| Nickel | 6.75 |
| Selenium | <5 |
| Zinc | 33.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-52 |
| Date Analyzed: | 11/15/22 | Data File: | 210409-52.166 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 4.07 |
| Selenium | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | I2-787 mb |
| Date Analyzed: | 11/09/22 | Data File: | I2-787 mb.346 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | I2-788 mb |
| Date Analyzed: | 11/09/22 | Data File: | I2-788 mb.348 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409
Date Extracted: 11/09/22
Date Analyzed: 11/12/22 and 11/15/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| B13-S1-5<br>210409-01 | <0.1 |
| B13-S2-10<br>210409-02 | <0.1 |
| B13-S4-20<br>210409-04 | <0.1 |
| B13-S10-50<br>210409-10 | <0.1 |
| B17-S1-5<br>210409-11 | <0.1 |
| B17-S3-15<br>210409-13 | <0.1 |
| B17-S5-25<br>210409-15 | <0.1 |
| B17-S8-40<br>210409-18 | <0.1 |
| B17-S1D<br>210409-21 | <0.1 |
| B14-S1-5<br>210409-22 | <0.1 |
| B14-S2-10<br>210409-23 | <0.1 |
| B14-S4-19<br>210409-25 | <0.1 |
| B14-S8-40<br>210409-29 | <0.1 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409
Date Extracted: 11/09/22
Date Analyzed: 11/12/22 and 11/15/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| B16-S1-5<br>210409-32 | <0.1 |
| B16-S2-7<br>210409-33 | <0.1 |
| B16-S3-15<br>210409-34 | <0.1 |
| B16-S5-25<br>210409-36 | <0.1 |
| B16-S10-50<br>210409-41 | <0.1 |
| B11-S1-5<br>210409-42 | <0.1 |
| B11-S1D<br>210409-44 | <0.1 |
| B11-S3-15<br>210409-45 | <0.1 |
| B11-S7-35<br>210409-49 | <0.1 |
| B11-S10-50<br>210409-52 | <0.1 |
| Method Blank<br>i2-787 MB | <0.1 |
| Method Blank<br>i2-788 MB | <0.1 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B13-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-01 1/0.25 |
| Date Analyzed: | 11/08/22 | Data File: | 110744.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | 84 | 120 |
| Toluene-d8 | 91 | 73 | 128 |
| 4-Bromofluorobenzene | 102 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 ca | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | 0.0041 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | 0.021 |
| Hexane | <0.25 ca | o-Xylene | 0.0047 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 ca |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 ca |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | 0.0021 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0096 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B13-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-02 1/0.25 |
| Date Analyzed: | 11/08/22 | Data File: | 110745.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 84 | 120 |
| Toluene-d8 | 95 | 73 | 128 |
| 4-Bromofluorobenzene | 101 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 ca | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 ca | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 ca |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 ca |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B13-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-04 1/0.25 |
| Date Analyzed: | 11/08/22 | Data File: | 110746.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 84 | 120 |
| Toluene-d8 | 98 | 73 | 128 |
| 4-Bromofluorobenzene | 102 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 ca | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 ca | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 ca |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 ca |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B13-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-10 1/0.25 |
| Date Analyzed: | 11/08/22 | Data File: | 110747.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 84 | 120 |
| Toluene-d8 | 99 | 73 | 128 |
| 4-Bromofluorobenzene | 101 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 ca | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 ca | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 ca |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 ca |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-11 1/0.25 |
| Date Analyzed: | 11/08/22 | Data File: | 110748.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | 84 | 120 |
| Toluene-d8 | 91 | 73 | 128 |
| 4-Bromofluorobenzene | 104 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 ca | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 ca | o-Xylene | 0.0021 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 ca |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 ca |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | 0.0012 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0036 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-13 1/0.25 |
| Date Analyzed: | 11/08/22 | Data File: | 110749.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 84 | 120 |
| Toluene-d8 | 98 | 73 | 128 |
| 4-Bromofluorobenzene | 102 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 ca | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 ca | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 ca |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 ca |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-15 1/0.25 |
| Date Analyzed: | 11/08/22 | Data File: | 110750.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | 84 | 120 |
| Toluene-d8 | 97 | 73 | 128 |
| 4-Bromofluorobenzene | 103 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 ca | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 ca | o-Xylene | <0.001 |
| Methylene chloride | 0.30 lc | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 ca |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 ca |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0020 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-18 1/0.25 |
| Date Analyzed: | 11/08/22 | Data File: | 110751.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | 84 | 120 |
| Toluene-d8 | 97 | 73 | 128 |
| 4-Bromofluorobenzene | 104 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 ca | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 ca | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 ca |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 ca |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-S1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-21 1/0.25 |
| Date Analyzed: | 11/08/22 | Data File: | 110752.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 84 | 120 |
| Toluene-d8 | 99 | 73 | 128 |
| 4-Bromofluorobenzene | 100 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 ca | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 ca | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 ca |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 ca |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B14-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-22 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110923.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 84 | 120 |
| Toluene-d8 | 100 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B14-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-23 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110924.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | 84 | 120 |
| Toluene-d8 | 97 | 73 | 128 |
| 4-Bromofluorobenzene | 95 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B14-S4-19 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-25 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110925.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | 84 | 120 |
| Toluene-d8 | 99 | 73 | 128 |
| 4-Bromofluorobenzene | 100 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B14-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-29 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110926.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 85 | 84 | 120 |
| Toluene-d8 | 91 | 73 | 128 |
| 4-Bromofluorobenzene | 100 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-32 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110927.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 84 | 120 |
| Toluene-d8 | 101 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | 0.0012 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | 0.0034 |
| Hexane | <0.25 | o-Xylene | 0.0016 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | 0.0012 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0072 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-S2-7 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-33 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110928.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 84 | 120 |
| Toluene-d8 | 101 | 73 | 128 |
| 4-Bromofluorobenzene | 99 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-34 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110929.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 84 | 120 |
| Toluene-d8 | 101 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | 0.0044 |
| Hexane | <0.25 | o-Xylene | 0.0011 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | 0.0010 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0029 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-36 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110930.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 84 | 120 |
| Toluene-d8 | 100 | 73 | 128 |
| 4-Bromofluorobenzene | 102 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-41 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110931.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 84 | 120 |
| Toluene-d8 | 99 | 73 | 128 |
| 4-Bromofluorobenzene | 99 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-42 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110932.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 84 | 120 |
| Toluene-d8 | 98 | 73 | 128 |
| 4-Bromofluorobenzene | 100 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-S1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-44 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110933.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 84 | 120 |
| Toluene-d8 | 101 | 73 | 128 |
| 4-Bromofluorobenzene | 97 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-45 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110934.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 84 | 120 |
| Toluene-d8 | 100 | 73 | 128 |
| 4-Bromofluorobenzene | 101 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-S7-35 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-49 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110935.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | 84 | 120 |
| Toluene-d8 | 99 | 73 | 128 |
| 4-Bromofluorobenzene | 96 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 210409-52 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110936.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 84 | 120 |
| Toluene-d8 | 98 | 73 | 128 |
| 4-Bromofluorobenzene | 101 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/07/22 | Lab ID: | 02-2629 mb 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110939.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | 84 | 120 |
| Toluene-d8 | 91 | 73 | 128 |
| 4-Bromofluorobenzene | 96 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 02-2643 mb 1/0.25 |
| Date Analyzed: | 11/09/22 | Data File: | 110921.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 91 | 84 | 120 |
| Toluene-d8 | 92 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B13-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-01 1/5 |
| Date Analyzed: | 11/10/22 | Data File: | 111024.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 86 d | 10 | 198 |
| 2-Fluorobiphenyl | 86 d | 45 | 117 |
| 2,4,6-Tribromophenol | 81 d ca | 11 | 158 |
| Terphenyl-d14 | 106 d | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.01 |
| 2-Methylnaphthalene | <0.01 |
| 1-Methylnaphthalene | <0.01 |
| Acenaphthylene | <0.01 |
| Acenaphthene | <0.01 |
| Fluorene | <0.01 |
| Phenanthrene | 0.023 |
| Anthracene | <0.01 |
| Fluoranthene | 0.042 |
| Pyrene | 0.049 |
| Benz(a)anthracene | 0.023 |
| Chrysene | 0.031 |
| Benzo(a)pyrene | 0.027 |
| Benzo(b)fluoranthene | 0.040 jl |
| Benzo(k)fluoranthene | 0.011 |
| Indeno(1,2,3-cd)pyrene | 0.017 |
| Dibenz(a,h)anthracene | <0.01 |
| Benzo(g,h,i)perylene | 0.024 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B13-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-02 |
| Date Analyzed: | 11/10/22 | Data File: | 111014.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 73 | 10 | 198 |
| 2-Fluorobiphenyl | 91 | 45 | 117 |
| 2,4,6-Tribromophenol | 80 ca | 11 | 158 |
| Terphenyl-d14 | 106 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B13-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-04 |
| Date Analyzed: | 11/10/22 | Data File: | 111013.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 69 | 10 | 198 |
| 2-Fluorobiphenyl | 73 | 45 | 117 |
| 2,4,6-Tribromophenol | 76 | 11 | 158 |
| Terphenyl-d14 | 108 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B13-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-10 |
| Date Analyzed: | 11/10/22 | Data File: | 111015.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 63 | 10 | 198 |
| 2-Fluorobiphenyl | 78 | 45 | 117 |
| 2,4,6-Tribromophenol | 68 ca | 11 | 158 |
| Terphenyl-d14 | 95 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-11 |
| Date Analyzed: | 11/10/22 | Data File: | 111016.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 71 | 10 | 198 |
| 2-Fluorobiphenyl | 86 | 45 | 117 |
| 2,4,6-Tribromophenol | 85 ca | 11 | 158 |
| Terphenyl-d14 | 108 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-13 |
| Date Analyzed: | 11/10/22 | Data File: | 111017.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 61 | 10 | 198 |
| 2-Fluorobiphenyl | 80 | 45 | 117 |
| 2,4,6-Tribromophenol | 76 ca | 11 | 158 |
| Terphenyl-d14 | 105 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-15 |
| Date Analyzed: | 11/10/22 | Data File: | 111013.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 64 | 10 | 198 |
| 2-Fluorobiphenyl | 84 | 45 | 117 |
| 2,4,6-Tribromophenol | 72 ca | 11 | 158 |
| Terphenyl-d14 | 97 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-18 |
| Date Analyzed: | 11/10/22 | Data File: | 111018.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 73 | 10 | 198 |
| 2-Fluorobiphenyl | 85 | 45 | 117 |
| 2,4,6-Tribromophenol | 81 ca | 11 | 158 |
| Terphenyl-d14 | 103 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B17-S1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-21 |
| Date Analyzed: | 11/10/22 | Data File: | 111019.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 81 | 10 | 198 |
| 2-Fluorobiphenyl | 91 | 45 | 117 |
| 2,4,6-Tribromophenol | 86 ca | 11 | 158 |
| Terphenyl-d14 | 98 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B14-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-22 |
| Date Analyzed: | 11/10/22 | Data File: | 111020.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 83 | 10 | 198 |
| 2-Fluorobiphenyl | 89 | 45 | 117 |
| 2,4,6-Tribromophenol | 90 ca | 11 | 158 |
| Terphenyl-d14 | 100 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B14-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-23 |
| Date Analyzed: | 11/10/22 | Data File: | 111021.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 74 | 10 | 198 |
| 2-Fluorobiphenyl | 80 | 45 | 117 |
| 2,4,6-Tribromophenol | 80 ca | 11 | 158 |
| Terphenyl-d14 | 96 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B14-S4-19 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-25 |
| Date Analyzed: | 11/10/22 | Data File: | 111022.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 77 | 10 | 198 |
| 2-Fluorobiphenyl | 88 | 45 | 117 |
| 2,4,6-Tribromophenol | 83 ca | 11 | 158 |
| Terphenyl-d14 | 102 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B14-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-29 |
| Date Analyzed: | 11/10/22 | Data File: | 111023.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 79 | 10 | 198 |
| 2-Fluorobiphenyl | 87 | 45 | 117 |
| 2,4,6-Tribromophenol | 80 ca | 11 | 158 |
| Terphenyl-d14 | 100 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-32 |
| Date Analyzed: | 11/11/22 | Data File: | 111117.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 82 | 10 | 198 |
| 2-Fluorobiphenyl | 85 | 45 | 117 |
| 2,4,6-Tribromophenol | 95 ca | 11 | 158 |
| Terphenyl-d14 | 101 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-S2-7 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-33 |
| Date Analyzed: | 11/11/22 | Data File: | 111118.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 78 | 10 | 198 |
| 2-Fluorobiphenyl | 81 | 45 | 117 |
| 2,4,6-Tribromophenol | 94 ca | 11 | 158 |
| Terphenyl-d14 | 96 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-34 |
| Date Analyzed: | 11/11/22 | Data File: | 111119.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 82 | 10 | 198 |
| 2-Fluorobiphenyl | 86 | 45 | 117 |
| 2,4,6-Tribromophenol | 96 ca | 11 | 158 |
| Terphenyl-d14 | 100 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-36 |
| Date Analyzed: | 11/11/22 | Data File: | 111120.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 93 | 10 | 198 |
| 2-Fluorobiphenyl | 94 | 45 | 117 |
| 2,4,6-Tribromophenol | 101 ca | 11 | 158 |
| Terphenyl-d14 | 102 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B16-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-41 |
| Date Analyzed: | 11/11/22 | Data File: | 111121.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 51 | 10 | 198 |
| 2-Fluorobiphenyl | 54 | 45 | 117 |
| 2,4,6-Tribromophenol | 72 ca | 11 | 158 |
| Terphenyl-d14 | 87 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-42 |
| Date Analyzed: | 11/11/22 | Data File: | 111122.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 87 | 10 | 198 |
| 2-Fluorobiphenyl | 86 | 45 | 117 |
| 2,4,6-Tribromophenol | 99 ca | 11 | 158 |
| Terphenyl-d14 | 94 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-S1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-44 |
| Date Analyzed: | 11/11/22 | Data File: | 111123.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 92 | 10 | 198 |
| 2-Fluorobiphenyl | 88 | 45 | 117 |
| 2,4,6-Tribromophenol | 103 ca | 11 | 158 |
| Terphenyl-d14 | 96 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | 0.0021 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-45 |
| Date Analyzed: | 11/12/22 | Data File: | 111210.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 69 | 10 | 198 |
| 2-Fluorobiphenyl | 81 | 45 | 117 |
| 2,4,6-Tribromophenol | 82 ca | 11 | 158 |
| Terphenyl-d14 | 97 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-S7-35 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-49 |
| Date Analyzed: | 11/12/22 | Data File: | 111209.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 64 | 10 | 198 |
| 2-Fluorobiphenyl | 70 | 45 | 117 |
| 2,4,6-Tribromophenol | 70 ca | 11 | 158 |
| Terphenyl-d14 | 87 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-S10-50 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/26/22 | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 210409-52 |
| Date Analyzed: | 11/12/22 | Data File: | 111211.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 78 | 10 | 198 |
| 2-Fluorobiphenyl | 84 | 45 | 117 |
| 2,4,6-Tribromophenol | 83 | 11 | 158 |
| Terphenyl-d14 | 97 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/08/22 | Lab ID: | 02-2700 mb2 |
| Date Analyzed: | 11/11/22 | Data File: | 111106.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 82 | 10 | 198 |
| 2-Fluorobiphenyl | 86 | 45 | 117 |
| 2,4,6-Tribromophenol | 84 ca | 11 | 158 |
| Terphenyl-d14 | 101 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210409 |
| Date Extracted: | 11/09/22 | Lab ID: | 02-2701 mb |
| Date Analyzed: | 11/10/22 | Data File: | 111012.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 95 | 10 | 198 |
| 2-Fluorobiphenyl | 87 | 45 | 117 |
| 2,4,6-Tribromophenol | 85 | 11 | 158 |
| Terphenyl-d14 | 126 vo | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 211021-01 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 105 | 71-131 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 211052-01 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 105 | 61-153 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 211001-03 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 55 | 75 | 80 | 63-146 | 6 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 101 | 79-144 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 210409-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet Wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 420 | 70 | 73 | 63-146 | 4 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 82 | 79-144 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 210409-01 x5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | <5 | 69 vo | 64 vo | 75-125 | 8 |
| Barium | mg/kg (ppm) | 50 | 72.1 | 106 | 87 | 75-125 | 20 |
| Cadmium | mg/kg (ppm) | 10 | <5 | 95 | 89 | 75-125 | 7 |
| Chromium | mg/kg (ppm) | 50 | 14.1 | 90 | 82 | 75-125 | 9 |
| Copper | mg/kg (ppm) | 50 | 52.5 | 93 | 80 | 75-125 | 15 |
| Lead | mg/kg (ppm) | 50 | 19.9 | 85 | 85 | 75-125 | 0 |
| Nickel | mg/kg (ppm) | 25 | 16.4 | 90 | 81 | 75-125 | 11 |
| Selenium | mg/kg (ppm) | 5 | <5 | 80 | 51 vo | 75-125 | 44 vo |
| Silver | mg/kg (ppm) | 10 | <5 | 86 | 83 | 75-125 | 4 |
| Zinc | mg/kg (ppm) | 50 | 54.1 | 82 | 70 b | 75-125 | 16 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 85 | 80-120 |
| Barium | mg/kg (ppm) | 50 | 95 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 94 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 100 | 80-120 |
| Copper | mg/kg (ppm) | 50 | 99 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 96 | 80-120 |
| Nickel | mg/kg (ppm) | 25 | 100 | 80-120 |
| Selenium | mg/kg (ppm) | 5 | 86 | 80-120 |
| Silver | mg/kg (ppm) | 10 | 95 | 80-120 |
| Zinc | mg/kg (ppm) | 50 | 98 | 80-120 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 210409-49 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 3.50 | 86 | 86 | 75-125 | 0 |
| Barium | mg/kg (ppm) | 50 | 44.6 | 149 b | 145 b | 75-125 | 3 |
| Cadmium | mg/kg (ppm) | 10 | <1 | 111 | 115 | 75-125 | 4 |
| Chromium | mg/kg (ppm) | 50 | 7.41 | 73 vo | 73 vo | 75-125 | 0 |
| Copper | mg/kg (ppm) | 50 | 28.6 | 78 | 74 b | 75-125 | 5 |
| Lead | mg/kg (ppm) | 50 | 2.02 | 80 | 83 | 75-125 | 4 |
| Nickel | mg/kg (ppm) | 25 | 6.56 | 73 b | 75 | 75-125 | 3 |
| Selenium | mg/kg (ppm) | 5 | <1 | 84 | 89 | 75-125 | 6 |
| Silver | mg/kg (ppm) | 10 | <1 | 79 | 82 | 75-125 | 4 |
| Zinc | mg/kg (ppm) | 50 | 31.1 | 82 | 85 | 75-125 | 4 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 95 | 80-120 |
| Barium | mg/kg (ppm) | 50 | 99 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 94 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 105 | 80-120 |
| Copper | mg/kg (ppm) | 50 | 101 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 99 | 80-120 |
| Nickel | mg/kg (ppm) | 25 | 101 | 80-120 |
| Selenium | mg/kg (ppm) | 5 | 95 | 80-120 |
| Silver | mg/kg (ppm) | 10 | 100 | 80-120 |
| Zinc | mg/kg (ppm) | 50 | 96 | 80-120 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 210409-01 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 5 | 0.20 | 114 | 152 vo | 71-125 | 29 vo |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 5 | 103 | 68-125 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 210409-49 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 5 | 0.14 | 117 | 113 | 71-125 | 3 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 5 | 92 | 68-125 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 211091-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1.0 | <0.5 | 28 | 24 | 10-47 | 15 |
| Chloromethane | mg/kg (ppm) | 1.0 | <0.5 | 55 | 44 | 10-88 | 22 vo |
| Vinyl chloride | mg/kg (ppm) | 1.0 | <0.05 | 53 | 47 | 10-79 | 12 |
| Bromomethane | mg/kg (ppm) | 1.0 | <0.5 | 90 vo | 80 | 10-85 | 12 |
| Chloroethane | mg/kg (ppm) | 1.0 | <0.5 | 76 | 70 | 11-106 | 8 |
| Trichlorofluoromethane | mg/kg (ppm) | 1.0 | <0.5 | 71 | 59 | 10-85 | 18 |
| Acetone | mg/kg (ppm) | 5.0 | <5 | 96 | 90 | 10-224 | 6 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1.0 | <0.05 | 82 | 72 | 11-105 | 13 |
| Hexane | mg/kg (ppm) | 1.0 | <0.25 | 72 | 59 | 10-106 | 20 |
| Methylene chloride | mg/kg (ppm) | 1.0 | <0.5 | 97 | 85 | 10-139 | 13 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1.0 | <0.05 | 116 | 105 | 18-131 | 10 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | <0.05 | 91 | 82 | 16-122 | 10 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1.0 | <0.05 | 99 | 92 | 19-125 | 7 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 104 | 98 | 10-184 | 6 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | <0.05 | 101 | 91 | 18-129 | 10 |
| Chloroform | mg/kg (ppm) | 1.0 | <0.05 | 101 | 92 | 18-126 | 9 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5.0 | <1 | 108 | 98 | 10-190 | 10 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1.0 | <0.05 | 109 | 98 | 19-138 | 11 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1.0 | <0.05 | 104 | 93 | 16-126 | 11 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1.0 | <0.05 | 103 | 92 | 19-129 | 11 |
| Carbon tetrachloride | mg/kg (ppm) | 1.0 | <0.05 | 95 | 83 | 13-125 | 13 |
| Benzene | mg/kg (ppm) | 1.0 | <0.03 | 96 | 86 | 15-129 | 11 |
| Trichloroethene | mg/kg (ppm) | 1.0 | <0.02 | 112 | 103 | 14-127 | 8 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 100 | 92 | 17-137 | 8 |
| Bromodichloromethane | mg/kg (ppm) | 1.0 | <0.05 | 102 | 93 | 24-130 | 9 |
| Dibromomethane | mg/kg (ppm) | 1.0 | <0.05 | 97 | 89 | 20-138 | 9 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5.0 | <1 | 119 | 105 | 21-139 | 12 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | <0.05 | 108 | 94 | 17-135 | 14 |
| Toluene | mg/kg (ppm) | 1.0 | <0.05 | 107 | 104 | 15-129 | 3 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | <0.05 | 110 | 110 | 18-130 | 0 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1.0 | <0.05 | 105 | 104 | 29-128 | 1 |
| 2-Hexanone | mg/kg (ppm) | 5.0 | <0.5 | 116 | 111 | 28-142 | 4 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 105 | 100 | 20-135 | 5 |
| Tetrachloroethene | mg/kg (ppm) | 1.0 | <0.025 | 114 | 113 | 20-121 | 1 |
| Dibromochloromethane | mg/kg (ppm) | 1.0 | <0.05 | 102 | 101 | 11-138 | 1 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1.0 | <0.05 | 106 | 104 | 21-130 | 2 |
| Chlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 106 | 107 | 19-129 | 1 |
| Ethylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 105 | 103 | 23-133 | 2 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | <0.05 | 104 | 103 | 16-127 | 1 |
| m,p-Xylene | mg/kg (ppm) | 2.0 | <0.1 | 107 | 105 | 19-134 | 2 |
| o-Xylene | mg/kg (ppm) | 1.0 | <0.05 | 107 | 105 | 20-132 | 2 |
| Styrene | mg/kg (ppm) | 1.0 | <0.05 | 111 | 109 | 23-127 | 2 |
| Isopropylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 111 | 110 | 21-134 | 1 |
| Bromoform | mg/kg (ppm) | 1.0 | <0.05 | 95 | 94 | 10-142 | 1 |
| n-Propylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 113 | 108 | 10-141 | 5 |
| Bromobenzene | mg/kg (ppm) | 1.0 | <0.05 | 111 | 108 | 10-135 | 3 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 114 | 110 | 20-136 | 4 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | <0.05 | 95 | 86 | 10-234 | 10 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 102 | 100 | 10-144 | 2 |
| 2-Chlorotoluene | mg/kg (ppm) | 1.0 | <0.05 | 106 | 108 | 10-139 | 2 |
| 4-Chlorotoluene | mg/kg (ppm) | 1.0 | <0.05 | 110 | 106 | 10-139 | 4 |
| tert-Butylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 112 | 112 | 10-144 | 0 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 114 | 110 | 24-133 | 4 |
| sec-Butylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 112 | 111 | 23-134 | 1 |
| p-Isopropyltoluene | mg/kg (ppm) | 1.0 | <0.05 | 116 | 113 | 25-131 | 3 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 111 | 108 | 10-143 | 3 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 110 | 107 | 10-146 | 3 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 113 | 110 | 10-144 | 3 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1.0 | <0.5 | 102 | 100 | 10-163 | 2 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1.0 | <0.25 | 112 | 111 | 10-147 | 1 |
| Hexachlorobutadiene | mg/kg (ppm) | 1.0 | <0.25 | 111 | 110 | 10-162 | 1 |
| Naphthalene | mg/kg (ppm) | 1.0 | <0.05 | 112 | 115 | 30-138 | 3 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1.0 | <0.25 | 114 | 115 | 10-173 | 1 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1.0 | 41 | 10-93 |
| Chloromethane | mg/kg (ppm) | 1.0 | 54 | 34-101 |
| Vinyl chloride | mg/kg (ppm) | 1.0 | 58 | 47-106 |
| Bromomethane | mg/kg (ppm) | 1.0 | 79 | 38-123 |
| Chloroethane | mg/kg (ppm) | 1.0 | 71 | 44-123 |
| Trichlorofluoromethane | mg/kg (ppm) | 1.0 | 74 | 56-108 |
| Acetone | mg/kg (ppm) | 5.0 | 80 | 24-185 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1.0 | 75 | 61-118 |
| Hexane | mg/kg (ppm) | 1.0 | 75 | 54-142 |
| Methylene chloride | mg/kg (ppm) | 1.0 | 79 | 10-213 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1.0 | 94 | 70-130 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | 80 | 70-130 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1.0 | 84 | 70-130 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1.0 | 90 | 45-172 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | 82 | 70-130 |
| Chloroform | mg/kg (ppm) | 1.0 | 83 | 70-130 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5.0 | 76 | 36-182 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1.0 | 90 | 66-140 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1.0 | 87 | 70-130 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1.0 | 87 | 70-130 |
| Carbon tetrachloride | mg/kg (ppm) | 1.0 | 79 | 68-146 |
| Benzene | mg/kg (ppm) | 1.0 | 80 | 70-130 |
| Trichloroethene | mg/kg (ppm) | 1.0 | 92 | 53-133 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1.0 | 84 | 67-137 |
| Bromodichloromethane | mg/kg (ppm) | 1.0 | 81 | 70-130 |
| Dibromomethane | mg/kg (ppm) | 1.0 | 86 | 70-130 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5.0 | 93 | 70-130 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | 84 | 70-130 |
| Toluene | mg/kg (ppm) | 1.0 | 95 | 63-127 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | 96 | 70-130 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1.0 | 93 | 70-130 |
| 2-Hexanone | mg/kg (ppm) | 5.0 | 97 | 65-148 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1.0 | 90 | 67-135 |
| Tetrachloroethene | mg/kg (ppm) | 1.0 | 103 | 59-138 |
| Dibromochloromethane | mg/kg (ppm) | 1.0 | 87 | 61-154 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1.0 | 92 | 70-130 |
| Chlorobenzene | mg/kg (ppm) | 1.0 | 95 | 65-133 |
| Ethylbenzene | mg/kg (ppm) | 1.0 | 92 | 60-140 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | 90 | 68-129 |
| m,p-Xylene | mg/kg (ppm) | 2.0 | 94 | 56-145 |
| o-Xylene | mg/kg (ppm) | 1.0 | 94 | 61-137 |
| Styrene | mg/kg (ppm) | 1.0 | 97 | 61-138 |
| Isopropylbenzene | mg/kg (ppm) | 1.0 | 99 | 52-148 |
| Bromoform | mg/kg (ppm) | 1.0 | 79 | 57-166 |
| n-Propylbenzene | mg/kg (ppm) | 1.0 | 96 | 36-162 |
| Bromobenzene | mg/kg (ppm) | 1.0 | 93 | 63-127 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1.0 | 100 | 43-156 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | 81 | 35-184 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1.0 | 88 | 70-130 |
| 2-Chlorotoluene | mg/kg (ppm) | 1.0 | 94 | 50-146 |
| 4-Chlorotoluene | mg/kg (ppm) | 1.0 | 94 | 47-150 |
| tert-Butylbenzene | mg/kg (ppm) | 1.0 | 97 | 41-154 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1.0 | 100 | 42-159 |
| sec-Butylbenzene | mg/kg (ppm) | 1.0 | 97 | 25-175 |
| p-Isopropyltoluene | mg/kg (ppm) | 1.0 | 99 | 18-186 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1.0 | 97 | 49-149 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1.0 | 94 | 48-149 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1.0 | 95 | 58-139 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1.0 | 89 | 70-130 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1.0 | 97 | 39-166 |
| Hexachlorobutadiene | mg/kg (ppm) | 1.0 | 97 | 41-186 |
| Naphthalene | mg/kg (ppm) | 1.0 | 96 | 67-143 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1.0 | 98 | 49-165 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1.0 | 60 | 48 | 10-93 | 22 vo |
| Chloromethane | mg/kg (ppm) | 1.0 | 74 | 54 | 34-101 | 31 vo |
| Vinyl chloride | mg/kg (ppm) | 1.0 | 78 | 60 | 47-106 | 26 vo |
| Bromomethane | mg/kg (ppm) | 1.0 | 109 | 91 | 38-123 | 18 |
| Chloroethane | mg/kg (ppm) | 1.0 | 98 | 72 | 44-123 | 31 vo |
| Trichlorofluoromethane | mg/kg (ppm) | 1.0 | 100 | 74 | 56-108 | 30 vo |
| Acetone | mg/kg (ppm) | 5.0 | 118 | 84 | 24-185 | 34 vo |
| 1,1-Dichloroethene | mg/kg (ppm) | 1.0 | 97 | 73 | 61-118 | 28 vo |
| Hexane | mg/kg (ppm) | 1.0 | 103 | 77 | 54-142 | 29 vo |
| Methylene chloride | mg/kg (ppm) | 1.0 | 109 | 80 | 10-213 | 31 vo |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1.0 | 123 | 90 | 70-130 | 31 vo |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | 104 | 76 | 70-130 | 31 vo |
| 1,1-Dichloroethane | mg/kg (ppm) | 1.0 | 106 | 77 | 70-130 | 32 vo |
| 2,2-Dichloropropane | mg/kg (ppm) | 1.0 | 146 | 114 | 45-172 | 25 vo |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | 110 | 80 | 70-130 | 32 vo |
| Chloroform | mg/kg (ppm) | 1.0 | 108 | 77 | 70-130 | 34 vo |
| 2-Butanone (MEK) | mg/kg (ppm) | 5.0 | 119 | 85 | 36-182 | 33 vo |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1.0 | 115 | 83 | 66-140 | 32 vo |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1.0 | 121 | 88 | 70-130 | 32 vo |
| 1,1-Dichloropropene | mg/kg (ppm) | 1.0 | 112 | 83 | 70-130 | 30 vo |
| Carbon tetrachloride | mg/kg (ppm) | 1.0 | 115 | 83 | 68-146 | 32 vo |
| Benzene | mg/kg (ppm) | 1.0 | 101 | 73 | 70-130 | 32 vo |
| Trichloroethene | mg/kg (ppm) | 1.0 | 105 | 75 | 53-133 | 33 vo |
| 1,2-Dichloropropane | mg/kg (ppm) | 1.0 | 103 | 77 | 67-137 | 29 vo |
| Bromodichloromethane | mg/kg (ppm) | 1.0 | 111 | 79 | 70-130 | 34 vo |
| Dibromomethane | mg/kg (ppm) | 1.0 | 104 | 76 | 70-130 | 31 vo |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5.0 | 123 | 89 | 70-130 | 32 vo |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | 121 | 86 | 70-130 | 34 vo |
| Toluene | mg/kg (ppm) | 1.0 | 118 | 86 | 63-127 | 31 vo |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | 136 vo | 101 | 70-130 | 30 vo |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1.0 | 112 | 83 | 70-130 | 30 vo |
| 2-Hexanone | mg/kg (ppm) | 5.0 | 122 | 92 | 65-148 | 28 vo |
| 1,3-Dichloropropane | mg/kg (ppm) | 1.0 | 109 | 80 | 67-135 | 31 vo |
| Tetrachloroethene | mg/kg (ppm) | 1.0 | 133 | 97 | 59-138 | 31 vo |
| Dibromochloromethane | mg/kg (ppm) | 1.0 | 120 | 90 | 61-154 | 29 vo |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1.0 | 119 | 87 | 70-130 | 31 vo |
| Chlorobenzene | mg/kg (ppm) | 1.0 | 123 | 87 | 65-133 | 34 vo |
| Ethylbenzene | mg/kg (ppm) | 1.0 | 114 | 84 | 60-140 | 30 vo |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | 127 | 90 | 68-129 | 34 vo |
| m,p-Xylene | mg/kg (ppm) | 2.0 | 119 | 88 | 56-145 | 30 vo |
| o-Xylene | mg/kg (ppm) | 1.0 | 120 | 88 | 61-137 | 31 vo |
| Styrene | mg/kg (ppm) | 1.0 | 123 | 90 | 61-138 | 31 vo |
| Isopropylbenzene | mg/kg (ppm) | 1.0 | 126 | 92 | 52-148 | 31 vo |
| Bromoform | mg/kg (ppm) | 1.0 | 118 | 86 | 57-166 | 31 vo |
| n-Propylbenzene | mg/kg (ppm) | 1.0 | 119 | 88 | 36-162 | 30 vo |
| Bromobenzene | mg/kg (ppm) | 1.0 | 123 | 90 | 63-127 | 31 vo |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1.0 | 127 | 91 | 43-156 | 33 vo |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | 121 | 86 | 35-184 | 34 vo |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1.0 | 105 | 78 | 70-130 | 30 vo |
| 2-Chlorotoluene | mg/kg (ppm) | 1.0 | 116 | 85 | 50-146 | 31 vo |
| 4-Chlorotoluene | mg/kg (ppm) | 1.0 | 118 | 85 | 47-150 | 33 vo |
| tert-Butylbenzene | mg/kg (ppm) | 1.0 | 127 | 90 | 41-154 | 34 vo |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1.0 | 126 | 90 | 42-159 | 33 vo |
| sec-Butylbenzene | mg/kg (ppm) | 1.0 | 125 | 89 | 25-175 | 34 vo |
| p-Isopropyltoluene | mg/kg (ppm) | 1.0 | 130 | 95 | 18-186 | 31 vo |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1.0 | 123 | 90 | 49-149 | 31 vo |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1.0 | 123 | 89 | 48-149 | 32 vo |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1.0 | 123 | 89 | 58-139 | 32 vo |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1.0 | 117 | 86 | 70-130 | 31 vo |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1.0 | 128 | 92 | 39-166 | 33 vo |
| Hexachlorobutadiene | mg/kg (ppm) | 1.0 | 129 | 91 | 41-186 | 35 vo |
| Naphthalene | mg/kg (ppm) | 1.0 | 126 | 92 | 67-143 | 31 vo |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1.0 | 128 | 93 | 49-165 | 32 vo |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 211108-01 1/5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | <0.01 | 85 | 83 | 28-125 | 2 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.01 | 89 | 89 | 10-192 | 0 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.01 | 87 | 87 | 10-163 | 0 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | <0.01 | 96 | 93 | 45-128 | 3 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 0.019 | 95 | 90 | 36-125 | 5 |
| Fluorene | mg/kg (ppm) | 0.83 | 0.014 | 96 | 94 | 48-121 | 2 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 0.19 | 107 b | 96 b | 50-150 | 11 b |
| Anthracene | mg/kg (ppm) | 0.83 | 0.036 | 97 | 93 | 50-150 | 4 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 0.25 | 108 b | 96 b | 50-150 | 12 b |
| Pyrene | mg/kg (ppm) | 0.83 | 0.26 | 121 b | 110 b | 40-134 | 10 b |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 0.12 | 116 | 109 | 50-150 | 6 |
| Chrysene | mg/kg (ppm) | 0.83 | 0.12 | 102 | 85 | 50-150 | 18 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 0.12 | 117 | 103 | 50-150 | 13 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 0.15 | 123 | 116 | 50-150 | 6 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 0.048 | 105 | 95 | 50-150 | 10 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 0.060 | 111 | 92 | 41-134 | 19 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 0.013 | 107 | 90 | 44-130 | 17 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 0.050 | 106 | 85 | 33-131 | 22 vo |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 94 | 58-108 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 103 | 67-109 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 100 | 66-107 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 108 | 70-130 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 103 | 66-112 |
| Fluorene | mg/kg (ppm) | 0.83 | 109 | 67-117 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 104 | 70-130 |
| Anthracene | mg/kg (ppm) | 0.83 | 106 | 70-130 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 109 | 70-130 |
| Pyrene | mg/kg (ppm) | 0.83 | 114 | 70-130 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 117 | 70-130 |
| Chrysene | mg/kg (ppm) | 0.83 | 105 | 70-130 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 113 | 68-120 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 112 | 69-125 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 107 | 70-130 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 122 | 67-129 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 120 | 67-128 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 116 | 64-127 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 210409-04 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.17 | <0.002 | 70 | 78 | 28-125 | 11 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.17 | <0.002 | 82 | 89 | 10-192 | 8 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.17 | <0.002 | 80 | 87 | 10-163 | 8 |
| Acenaphthylene | mg/kg (ppm) | 0.17 | <0.002 | 88 | 95 | 45-128 | 8 |
| Acenaphthene | mg/kg (ppm) | 0.17 | <0.002 | 85 | 92 | 36-125 | 8 |
| Fluorene | mg/kg (ppm) | 0.17 | <0.002 | 92 | 99 | 48-121 | 7 |
| Phenanthrene | mg/kg (ppm) | 0.17 | <0.002 | 92 | 94 | 50-150 | 2 |
| Anthracene | mg/kg (ppm) | 0.17 | <0.002 | 89 | 93 | 50-150 | 4 |
| Fluoranthene | mg/kg (ppm) | 0.17 | <0.002 | 100 | 103 | 50-150 | 3 |
| Pyrene | mg/kg (ppm) | 0.17 | <0.002 | 100 | 102 | 40-134 | 2 |
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | <0.002 | 106 | 109 | 50-150 | 3 |
| Chrysene | mg/kg (ppm) | 0.17 | <0.002 | 95 | 98 | 50-150 | 3 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | <0.002 | 102 | 108 | 50-150 | 6 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | <0.002 | 119 | 123 | 50-150 | 3 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | <0.002 | 109 | 114 | 50-150 | 4 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | <0.002 | 85 | 89 | 41-134 | 5 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | <0.002 | 88 | 94 | 44-130 | 7 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.17 | <0.002 | 78 | 83 | 33-131 | 6 |

Date of Report: 11/22/22
Date Received: 10/26/22
Project: Kosmos, F&BI 210409

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.17 | 78 | 58-108 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.17 | 92 | 67-109 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.17 | 90 | 66-107 |
| Acenaphthylene | mg/kg (ppm) | 0.17 | 98 | 70-130 |
| Acenaphthene | mg/kg (ppm) | 0.17 | 94 | 66-112 |
| Fluorene | mg/kg (ppm) | 0.17 | 102 | 67-117 |
| Phenanthrene | mg/kg (ppm) | 0.17 | 100 | 70-130 |
| Anthracene | mg/kg (ppm) | 0.17 | 99 | 70-130 |
| Fluoranthene | mg/kg (ppm) | 0.17 | 110 | 70-130 |
| Pyrene | mg/kg (ppm) | 0.17 | 116 | 70-130 |
| Benz(a)anthracene | mg/kg (ppm) | 0.17 | 122 | 70-130 |
| Chrysene | mg/kg (ppm) | 0.17 | 110 | 70-130 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.17 | 116 | 68-120 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.17 | 152 vo | 69-125 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.17 | 122 | 70-130 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.17 | 103 | 67-129 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.17 | 107 | 67-128 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.17 | 94 | 64-127 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

210409

# SAMPLE CHAIN OF CUSTODY

10/26/22

COC/CT2

Page # 1 of 6

Report To Angie Goodwin

Company Haley & Aldrich

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: Cosmos

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

**TURNAROUND TIME**
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | ~~EPH/VPH~~ | Metals (12) | EDH | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B13-S1-5 | 01A-5 | 10/25/22 | 0930 | Soil | 5 | X | X | | | X | X | | X | X | ● | | ● analyze per AG 11/4/22 ME |
| B13-S2-10 | 02 | | 0945 | | | X | X | | | X | X | | X | X | | | |
| B13-S3-15 | 03 | | 0955 | | | | | | | | | | | | | | |
| B13-S4-20 | 04 | | 1005 | | | X | X | | | X | X | | X | X | | | |
| B13-S5-25 | 05 | | 1010 | | | | | | | | | | | | | | |
| B13-S6-30 | 06 | | 1015 | | | | | | | | | | | | | | |
| B13-S7-35 | 07 | | 1035 | | | | | | | | | | | | | | |
| B13-S8-40 | 08 | | 1050 | | | | | | | | | | | | | | |
| B13-S9-45 | 09 | | 1100 | | | | | | | | | | | | | | |
| B13-S10-50 | 10 | ↓ | 1110 | ↓ | ↓ | X | X | | | X | X | | X | X | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Oglesbay | HQA | 10/26 | 1845 |
| Received by: | BISRAT TARESSE | FHI | 10/26 | 1845 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

210409

# SAMPLE CHAIN OF CUSTODY

10/26/22 CI2/COS 2 Page # ____ of 6

Report To [redacted]

Company

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*) [redacted]

| PROJECT NAME | PO # |
|---|---|
| FOSMOS | |
| REMARKS<br>Project specific RLs? - Yes / No | INVOICE TO |

**TURNAROUND TIME**
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B17-S1-5 | 11A-F | 10/25/22 | 1305 | Soil | 5 | X | X | | | X | X | | X | X | | | |
| B17-S2-7 | 12 | | 1325 | | | | | | | | | | | | | | |
| B17-S3-15 | 13 | | 1335 | | | X | X | | | X | X | | X | X | | | |
| B17-S4-20 | 14 | | 1345 | | | | | | | | | | | | | | |
| B17-S5-25 | 15 | | 1355 | | | X | X | | | X | X | | X | X | | | |
| B17-S6-30 | 16 | | 1410 | | | | | | | | | | | | | | |
| B17-S7-35 | 17 | | 1440 | | | | | | | | | | | | | | |
| B17-S8-40 | 18 | | 1450 | | | X | X | | | X | X | | X | X | | | |
| B17-S9-45 | 19 | | 1510 | | | | | | | | | | | | | | |
| B17-S10-50 | 20 | ✓ | 1530 | ✓ | ✓ | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Valcham | HSA | 10/26 | 1845 |
| Received by: | BRADLEY TAPESSE | FBI | 10/26 | 1845 |
| Relinquished by: | | Samples received at 4 °C | | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

210409

# SAMPLE CHAIN OF CUSTODY

10/26/22 Page # 3 of 6 COC

Report To Angie Goodwin

Company

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: Cosmos

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME: 5-12

☐ Standard turnaround

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Archive samples

☐ Other

Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B17-S10 | 21A-F | 10/25/22 | 1325 | Soil | 5 | X | X | | | X | X | | X | X | | | |
| B14-S1-5 | 22 | 10/26/22 | 0850 | Soil | | X | X | | | X | X | | X | X | | | |
| B14-S2-10 | 23 | | 0900 | | | X | X | | | X | X | | X | X | | | |
| B14-S3-15 | 24 | | 0910 | | | | | | | | | | | | | | |
| B14-S4-19 | 25 | | 0920 | | | X | X | | | X | X | | X | X | | | |
| B14-S5-25 | 26 | | 0930 | | | | | | | | | | | | | | |
| B14-S6-28 | 27 | | 0945 | | | | | | | | | | | | | | |
| B14-S7-35 | 28 | | 0955 | | | | | | | | | | | | | | |
| B14-S8-40 | 29 | | 1005 | | | X | X | | | X | X | | X | X | | | |
| B14-S9-45 | 30 | | 1015 | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Okahara | HA | 10/26 | 1845 |
| Received by: | BASRAT TADESSE | FSI | 10/26 | 18/45 |
| Relinquished by: | | Samples received at 4 °C | | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

210409

# SAMPLE CHAIN OF CUSTODY 10/26/22

CT2/COS

Page # 4 of 6

Report To Angel Goodman

Company

Address

City, State, ZIP

Phone Email

SAMPLERS (signature)

| PROJECT NAME | PO # |
|---|---|
| Cosmos | |
| REMARKS<br>Project specific RLs? - Yes / No | INVOICE TO |

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ANALYSES REQUESTED | | | | | | | | | | | |
| B14-S10-50 | 31A-F | 10/26/22 | 1025 | soil | 5 | | | | | | | | | | | | |
| B16-S1-5 | 32 | | 1050 | | | X | X | | | X | X | | X | X | | | |
| B16-S2-7 | 33 | | 1100 | | | X | X | | | X | X | | X | X | | | |
| B16-S3-15 | 34 | | 1110 | | | X | X | | | X | X | | X | X | | | |
| B16-S4-70 | 35 | | 1115 | | | | | | | | | | | | | | |
| B16-S5-25 | 36 | | 1130 | | | X | X | | | X | X | | X | X | | | |
| B16-S6-30 | 37 | | 1135 | | | | | | | | | | | | | | |
| B16-S7-35 | 38 | | 1155 | | | | | | | | | | | | | | |
| B16-S8-40 | 41 | | 1205 | | | | | | | | | | | | | | |
| B16-S9-45 | 40 | | 1215 | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Goodman | FA | 10/26 | 1845 |
| Received by: | BISRAT TADESE | FBI | 10/26 | 1845 |
| Relinquished by: | | samples received at | 4 °C | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

210409

# SAMPLE CHAIN OF CUSTODY

10/26/22 COS/COC 5 Page # 6 of 6

Report To A. Goodwin

Company

Address

City, State, ZIP

Phone Email

SAMPLERS (signature)

PROJECT NAME: Kosmos

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | EPH | VPH | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B16-S10-50 | 41 A-E | 10/26/22 | 1220 | Soil | 5 | X | X | | | X | X | | X | X | | | |
| B11-S1-5 | 42 | | 1330 | | | X | X | | | X | X | | X | X | | | |
| B11-S2-10 | 43 | | 1340 | | | | | | | | | | | | | | |
| B11-S10 | 44 | | 1345 | | | X | X | | | X | X | | X | X | ● | ● | |
| B11-S3-15 | 45 | | 1350 | | | X | X | | | X | X | | X | X | | | |
| B11-S4-20 | 46 | | 1355 | | | | | | | | | | | | | | |
| B11-S5-25 | 47 | | 1405 | | | | | | | | | | | | | | |
| B11-S6-30 | 48 | | 1415 | | | | | | | | | | | | | | |
| B11-S7-35 | 49 | | 1430 | | | X | X | | | X | X | | X | X | | | |
| B11-S8-40 | 50 | | 1435 | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Ishihara | HA | 10/26 | 1845 |
| Received by: | Bishat Tafesse | FB1 | 10/26 | 1848 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

210409

# SAMPLE CHAIN OF CUSTODY

10/26/22

CL2/COC

Page # 6 of 6

Report To A. Goodman

Company

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

| PROJECT NAME | PO # |
|---|---|
| Cosmos | |
| REMARKS<br>Project specific RLs? - Yes / No | INVOICE TO |

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| | | | | | | ANALYSES REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
| BH-59-45 | 51 A-F | 10/26/22 | 1440 | Soil | 5 | | | | | | | | | | | | |
| BH-S10-50 | 52 V | ↓ | 1445 | ↓ | 5 | X | X | | | X | X | | X | X | | | |
| | | | | | | | | | | | | | | | | | |
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| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Sakahara | HA | 10/26 | 1845 |
| Received by: | BISRAT TADESSE | FHI | 10/26 | 1845 |
| Relinquished by | | | | |
| Received by: | | Samples received at 4 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 210409**
**Work Order Number: 2211095**

November 18, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 23 sample(s) on 11/3/2022 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***
***Sample Moisture (Percent Moisture)***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *11/18/2022*

**CLIENT:** Friedman & Bruya
**Project:** 210409
**Work Order:** 2211095

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2211095-001 | B13-S1-5 | 10/25/2022 9:30 AM | 11/03/2022 12:18 PM |
| 2211095-002 | B13-S2-10 | 10/25/2022 9:45 AM | 11/03/2022 12:18 PM |
| 2211095-003 | B13-S4-20 | 10/25/2022 10:05 AM | 11/03/2022 12:18 PM |
| 2211095-004 | B13-S10-50 | 10/25/2022 11:10 AM | 11/03/2022 12:18 PM |
| 2211095-005 | B17-S1-5 | 10/25/2022 1:05 PM | 11/03/2022 12:18 PM |
| 2211095-006 | B17-S3-15 | 10/25/2022 1:35 PM | 11/03/2022 12:18 PM |
| 2211095-007 | B17-S5-25 | 10/25/2022 1:55 PM | 11/03/2022 12:18 PM |
| 2211095-008 | B17-S8-40 | 10/25/2022 2:50 PM | 11/03/2022 12:18 PM |
| 2211095-009 | B17-S1D | 10/25/2022 1:15 PM | 11/03/2022 12:18 PM |
| 2211095-010 | B14-S1-5 | 10/26/2022 8:50 AM | 11/03/2022 12:18 PM |
| 2211095-011 | B14-S2-10 | 10/26/2022 9:00 AM | 11/03/2022 12:18 PM |
| 2211095-012 | B14-S4-19 | 10/26/2022 9:20 AM | 11/03/2022 12:18 PM |
| 2211095-013 | B14-S8-40 | 10/26/2022 10:05 AM | 11/03/2022 12:18 PM |
| 2211095-014 | B16-S1-5 | 10/26/2022 10:50 AM | 11/03/2022 12:18 PM |
| 2211095-015 | B16-S2-7 | 10/26/2022 11:00 AM | 11/03/2022 12:18 PM |
| 2211095-016 | B16-S3-15 | 10/26/2022 11:10 AM | 11/03/2022 12:18 PM |
| 2211095-017 | B16-S5-25 | 10/26/2022 11:30 AM | 11/03/2022 12:18 PM |
| 2211095-018 | B16-S10-50 | 10/26/2022 12:20 PM | 11/03/2022 12:18 PM |
| 2211095-019 | B11-S1-5 | 10/26/2022 1:30 PM | 11/03/2022 12:18 PM |
| 2211095-020 | B11-S1D | 10/26/2022 1:45 PM | 11/03/2022 12:18 PM |
| 2211095-021 | B11-S3-15 | 10/26/2022 1:50 PM | 11/03/2022 12:18 PM |
| 2211095-022 | B11-S7-35 | 10/26/2022 2:30 PM | 11/03/2022 12:18 PM |
| 2211095-023 | B11-S10-50 | 10/26/2022 2:45 PM | 11/03/2022 12:18 PM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2211095**
Date: **11/18/2022**

**CLIENT:** Friedman & Bruya
**Project:** 210409

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2211095**
Date Reported: **11/18/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/25/2022 9:30:00 AM
**Project:** 210409
**Lab ID:** 2211095-001
**Matrix:** Soil
**Client Sample ID:** **B13-S1-5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38396 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 22.7 | | mg/Kg-dry | 1 | 11/16/2022 2:24:25 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 11.4 | | mg/Kg-dry | 1 | 11/16/2022 2:24:25 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 11.4 | | mg/Kg-dry | 1 | 11/16/2022 2:24:25 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 11.4 | | mg/Kg-dry | 1 | 11/16/2022 2:24:25 PM |
| Aliphatic Hydrocarbon (C21-C34) | 103 | 11.4 | | mg/Kg-dry | 1 | 11/16/2022 2:24:25 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 22.7 | | mg/Kg-dry | 1 | 11/16/2022 10:23:42 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 11.4 | | mg/Kg-dry | 1 | 11/16/2022 10:23:42 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 11.4 | | mg/Kg-dry | 1 | 11/16/2022 10:23:42 PM |
| Aromatic Hydrocarbon (C16-C21) | 17.2 | 11.4 | | mg/Kg-dry | 1 | 11/16/2022 10:23:42 PM |
| Aromatic Hydrocarbon (C21-C34) | 26.6 | 11.4 | Q | mg/Kg-dry | 1 | 11/16/2022 10:23:42 PM |
| Surr: 1-Chlorooctadecane | 66.5 | 50 - 150 | | %Rec | 1 | 11/16/2022 2:24:25 PM |
| Surr: o-Terphenyl | 88.1 | 50 - 150 | | %Rec | 1 | 11/16/2022 10:23:42 PM |

**NOTES:**
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79601 | | Analyst: ALB |
| Percent Moisture | 15.3 | 0.500 | | wt% | 1 | 11/7/2022 11:26:50 AM |

# Analytical Report

Work Order: **2211095**
Date Reported: **11/18/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/26/2022 1:45:00 PM
**Project:** 210409
**Lab ID:** 2211095-020
**Matrix:** Soil
**Client Sample ID:** **B11-S1D**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38396 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 23.0 | | mg/Kg-dry | 1 | 11/16/2022 2:47:26 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 11.5 | | mg/Kg-dry | 1 | 11/16/2022 2:47:26 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 11.5 | | mg/Kg-dry | 1 | 11/16/2022 2:47:26 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 11.5 | | mg/Kg-dry | 1 | 11/16/2022 2:47:26 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 11.5 | | mg/Kg-dry | 1 | 11/16/2022 2:47:26 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 23.0 | | mg/Kg-dry | 1 | 11/16/2022 10:46:17 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 11.5 | | mg/Kg-dry | 1 | 11/16/2022 10:46:17 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 11.5 | | mg/Kg-dry | 1 | 11/16/2022 10:46:17 PM |
| Aromatic Hydrocarbon (C16-C21) | 19.3 | 11.5 | | mg/Kg-dry | 1 | 11/16/2022 10:46:17 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 11.5 | | mg/Kg-dry | 1 | 11/16/2022 10:46:17 PM |
| Surr: 1-Chlorooctadecane | 60.7 | 50 - 150 | | %Rec | 1 | 11/16/2022 2:47:26 PM |
| Surr: o-Terphenyl | 88.0 | 50 - 150 | | %Rec | 1 | 11/16/2022 10:46:17 PM |
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79601 | | Analyst: ALB |
| Percent Moisture | 18.2 | 0.500 | | wt% | 1 | 11/7/2022 11:26:50 AM |

**Work Order:** 2211095
**CLIENT:** Friedman & Bruya
**Project:** 210409

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **MB-38396** | SampType: **MBLK** | Units: **mg/Kg** | Prep Date: **11/4/2022** | RunNo: **79908** |
|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **38396** | | Analysis Date: **11/16/2022** | SeqNo: **1648882** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 20.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.0 | | | | | | | | | |
| Surr: 1-Chlorooctadecane | 84.7 | | 100.0 | | 84.7 | 50 | 150 | | | | |

| Sample ID: **LCS-38396** | SampType: **LCS** | Units: **mg/Kg** | Prep Date: **11/4/2022** | RunNo: **79908** |
|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **38396** | | Analysis Date: **11/16/2022** | SeqNo: **1648883** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 139 | 20.0 | 250.0 | 0 | 55.4 | 16.3 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 99.8 | 10.0 | 125.0 | 0 | 79.8 | 36.7 | 107 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 102 | 10.0 | 125.0 | 0 | 81.9 | 45.3 | 127 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 112 | 10.0 | 125.0 | 0 | 89.2 | 47.3 | 129 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 88.4 | 10.0 | 125.0 | 0 | 70.7 | 35.2 | 139 | | | | |
| Surr: 1-Chlorooctadecane | 87.6 | | 100.0 | | 87.6 | 50 | 150 | | | | |

| Sample ID: **2211097-004AMS** | SampType: **MS** | Units: **mg/Kg-dry** | Prep Date: **11/4/2022** | RunNo: **79908** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **38396** | | Analysis Date: **11/16/2022** | SeqNo: **1648888** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 143 | 21.2 | 264.9 | 0 | 53.8 | 5.66 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 118 | 10.6 | 132.4 | 0 | 89.3 | 9.14 | 134 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 112 | 10.6 | 132.4 | 0 | 84.5 | 23.1 | 139 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 116 | 10.6 | 132.4 | 0 | 87.7 | 24.4 | 134 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 104 | 10.6 | 132.4 | 0 | 78.4 | 21.4 | 152 | | | | |
| Surr: 1-Chlorooctadecane | 90.7 | | 106.0 | | 85.6 | 50 | 150 | | | | |

**Work Order:** 2211095
**CLIENT:** Friedman & Bruya
**Project:** 210409

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **2211097-004AMSD** | SampType: **MSD** | Units: **mg/Kg-dry** | Prep Date: **11/4/2022** | RunNo: **79908** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **38396** | | Analysis Date: **11/16/2022** | SeqNo: **1648889** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 139 | 21.2 | 265.4 | 0 | 52.4 | 5.66 | 130 | 142.6 | 2.41 | 30 | |
| Aliphatic Hydrocarbon (C10-C12) | 104 | 10.6 | 132.7 | 0 | 78.3 | 9.14 | 134 | 118.2 | 12.8 | 30 | |
| Aliphatic Hydrocarbon (C12-C16) | 104 | 10.6 | 132.7 | 0 | 78.1 | 23.1 | 139 | 111.9 | 7.63 | 30 | |
| Aliphatic Hydrocarbon (C16-C21) | 106 | 10.6 | 132.7 | 0 | 80.2 | 24.4 | 134 | 116.1 | 8.64 | 30 | |
| Aliphatic Hydrocarbon (C21-C34) | 92.6 | 10.6 | 132.7 | 0 | 69.8 | 21.4 | 152 | 103.9 | 11.4 | 30 | |
| Surr: 1-Chlorooctadecane | 83.0 | | 106.2 | | 78.2 | 50 | 150 | | 0 | | |

| Sample ID: **MB-38396** | SampType: **MBLK** | Units: **mg/Kg** | Prep Date: **11/4/2022** | RunNo: **79908** |
|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **38396** | | Analysis Date: **11/16/2022** | SeqNo: **1648900** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 20.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | 10.1 | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.0 | | | | | | | | | |
| Surr: o-Terphenyl | 101 | | 100.0 | | 101 | 50 | 150 | | | | |

| Sample ID: **LCS-38396** | SampType: **LCS** | Units: **mg/Kg** | Prep Date: **11/4/2022** | RunNo: **79908** |
|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **38396** | | Analysis Date: **11/16/2022** | SeqNo: **1648901** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 166 | 20.0 | 250.0 | 0 | 66.5 | 23.1 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 94.5 | 10.0 | 125.0 | 0 | 75.6 | 46.8 | 104 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 116 | 10.0 | 125.0 | 0 | 92.4 | 54.1 | 111 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 98.6 | 10.0 | 125.0 | 0 | 78.9 | 55.4 | 124 | | | | B |
| Aromatic Hydrocarbon (C21-C34) | 112 | 10.0 | 125.0 | 0 | 89.4 | 48.5 | 134 | | | | |
| Surr: o-Terphenyl | 95.9 | | 100.0 | | 95.9 | 50 | 150 | | | | |

**Work Order:** 2211095
**CLIENT:** Friedman & Bruya
**Project:** 210409

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2211097-004AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/4/2022** RunNo: **79908**
Client ID: **BATCH** Batch ID: **38396** Analysis Date: **11/16/2022** SeqNo: **1648908**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 170 | 21.2 | 264.9 | 0 | 64.1 | 11.3 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 97.6 | 10.6 | 132.4 | 0 | 73.7 | 19.3 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 133 | 10.6 | 132.4 | 0 | 100 | 30.3 | 131 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 130 | 10.6 | 132.4 | 19.49 | 83.8 | 23.7 | 139 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 149 | 10.6 | 132.4 | 0 | 112 | 38.8 | 143 | | | | |
| Surr: o-Terphenyl | 104 | | 106.0 | | 98.6 | 50 | 150 | | | | |

Sample ID: **2211097-004AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **11/4/2022** RunNo: **79908**
Client ID: **BATCH** Batch ID: **38396** Analysis Date: **11/16/2022** SeqNo: **1648909**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 162 | 21.2 | 265.4 | 0 | 61.0 | 11.3 | 130 | 169.8 | 4.80 | 30 | |
| Aromatic Hydrocarbon (C10-C12) | 86.7 | 10.6 | 132.7 | 0 | 65.3 | 19.3 | 130 | 97.56 | 11.8 | 30 | |
| Aromatic Hydrocarbon (C12-C16) | 117 | 10.6 | 132.7 | 0 | 87.8 | 30.3 | 131 | 132.6 | 12.9 | 30 | |
| Aromatic Hydrocarbon (C16-C21) | 117 | 10.6 | 132.7 | 19.49 | 73.7 | 23.7 | 139 | 130.5 | 10.6 | 30 | |
| Aromatic Hydrocarbon (C21-C34) | 142 | 10.6 | 132.7 | 0 | 107 | 38.8 | 143 | 148.9 | 4.69 | 30 | |
| Surr: o-Terphenyl | 95.8 | | 106.2 | | 90.2 | 50 | 150 | | 0 | | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2211095 |
| Logged by: | Clare Griggs | Date Received: | 11/3/2022 12:18:00 PM |

## Chain of Custody

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes | ☑ | No ☐ | Not Present | ☐ |
| 2. | How was the sample delivered? | Courier | | | | |

## Log In

| | | | | | | |
|---|---|---|---|---|---|---|
| 3. | Coolers are present? | Yes | ☑ | No ☐ | NA | ☐ |
| 4. | Shipping container/cooler in good condition? | Yes | ☑ | No ☐ | | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes | ☐ | No ☐ | Not Present | ☑ |
| 6. | Was an attempt made to cool the samples? | Yes | ☑ | No ☐ | NA | ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes | ☑ | No ☐ | NA | ☐ |
| 8. | Sample(s) in proper container(s)? | Yes | ☑ | No ☐ | | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes | ☑ | No ☐ | | |
| 10. | Are samples properly preserved? | Yes | ☑ | No ☐ | | |
| 11. | Was preservative added to bottles? | Yes | ☐ | No ☑ | NA | ☐ |
| 12. | Is there headspace in the VOA vials? | Yes | ☐ | No ☐ | NA | ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes | ☑ | No ☐ | | |
| 14. | Does paperwork match bottle labels? | Yes | ☑ | No ☐ | | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes | ☑ | No ☐ | | |
| 16. | Is it clear what analyses were requested? | Yes | ☑ | No ☐ | | |
| 17. | Were all holding times able to be met? | Yes | ☑ | No ☐ | | |

## Special Handling (if applicable)

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes | ☐ | No ☐ | NA | ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

| Item # | Temp ºC |
|---|---|
| Sample | 4.3 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2211095

Page # 1 of 2


Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com


SUBCONTRACTER Fremont

| PROJECT NAME/NO. | PO # |
|---|---|
| 210409 | C-393 |

REMARKS

Please Email Results Hold

TURNAROUND TIME

☐ Standard TAT

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: EPH | VPH | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B13-S1-5 | | 10/25/2022 | 930 | soil | 1 | | | | | | | | | | | |
| B13-S2-10 | | 10/25/2022 | 945 | soil | 1 | | | | | | | | | | | |
| B13-S4-20 | | 10/25/2022 | 1005 | soil | 1 | | | | | | | | | | | |
| B13-S10-50 | | 10/25/2022 | 1110 | soil | 1 | | | | | | | | | | | |
| B17-S1-5 | | 10/25/2022 | 1305 | soil | 1 | | | | | | | | | | | |
| B17-S3-15 | | 10/25/2022 | 1335 | soil | 1 | | | | | | | | | | | |
| B17-S5-25 | | 10/25/2022 | 1355 | soil | 1 | | | | | | | | | | | |
| B17-S8-40 | | 10/25/2022 | 1450 | soil | 1 | | | | | | | | | | | |
| B17-S1D | | 10/25/2022 | 1315 | soil | 1 | | | | | | | | | | | |
| B14-S1-5 | | 10/26/2022 | 850 | soil | 1 | | | | | | | | | | | |
| B14-S2-10 | | 10/26/2022 | 900 | soil | 1 | | | | | | | | | | | |
| B14-S4-19 | | 10/26/2022 | 920 | soil | 1 | | | | | | | | | | | |
| B14-S8-40 | | 10/26/2022 | 1005 | soil | 1 | | | | | | | | | | | |


*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*


| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 11/3/22 | 1015 |
| Received by: | | Katherine Porter | FAI | 11/03/22 | 12:18 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2211095

Page # 2 of 2

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City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO. 210409

PO # C-393

REMARKS

Please Email Results Hold

TURNAROUND TIME

☒ Standard TAT

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: EPH | VPH | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B16-S1-5 | | 10/26/2022 | 1050 | soil | 1 | | | | | | | | | | | |
| B16-S2-7 | | 10/26/2022 | 1100 | soil | 1 | | | | | | | | | | | |
| B16-S3-15 | | 10/26/2022 | 1110 | soil | 1 | | | | | | | | | | | |
| B16-S5-25 | | 10/26/2022 | 1130 | soil | 1 | | | | | | | | | | | |
| B16-S10-50 | | 10/26/2022 | 1220 | soil | 1 | | | | | | | | | | | |
| B11-S1-5 | | 10/26/2022 | 1330 | soil | 1 | | | | | | | | | | | |
| B11-S1D | | 10/26/2022 | 1345 | soil | 1 | | | | | | | | | | | |
| B11-S3-15 | | 10/26/2022 | 1350 | soil | 1 | | | | | | | | | | | |
| B11-S7-35 | | 10/26/2022 | 1430 | soil | 1 | | | | | | | | | | | |
| B11-S10-50 | | 10/26/2022 | 1445 | soil | 1 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

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| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

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SUBCONTRACTER Fremont

| PROJECT NAME/NO. | PO # |
|---|---|
| 210409 | C-393 |

REMARKS

Please Email Results Hold

TURNAROUND TIME

☐ Standard TAT

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: EPH | VPH | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B13-S1-5 | | 10/25/2022 | 930 | soil | 1 | X | | | | | | | | | | Run per ME 11/4/22 -cg |
| B13-S2-10 | | 10/25/2022 | 945 | soil | 1 | | | | | | | | | | | |
| B13-S4-20 | | 10/25/2022 | 1005 | soil | 1 | | | | | | | | | | | |
| B13-S10-50 | | 10/25/2022 | 1110 | soil | 1 | | | | | | | | | | | |
| B17-S1-5 | | 10/25/2022 | 1305 | soil | 1 | | | | | | | | | | | |
| B17-S3-15 | | 10/25/2022 | 1335 | soil | 1 | | | | | | | | | | | |
| B17-S5-25 | | 10/25/2022 | 1355 | soil | 1 | | | | | | | | | | | |
| B17-S8-40 | | 10/25/2022 | 1450 | soil | 1 | | | | | | | | | | | |
| B17-S1D | | 10/25/2022 | 1315 | soil | 1 | | | | | | | | | | | |
| B14-S1-5 | | 10/26/2022 | 850 | soil | 1 | | | | | | | | | | | |
| B14-S2-10 | | 10/26/2022 | 900 | soil | 1 | | | | | | | | | | | |
| B14-S4-19 | | 10/26/2022 | 920 | soil | 1 | | | | | | | | | | | |
| B14-S8-40 | | 10/26/2022 | 1005 | soil | 1 | | | | | | | | | | | |


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|---|---|---|---|---|---|
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| Received by: | | Katherine Porter | FAI | 11/03/22 | 12:18 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2211095

Page # 2 of 2

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Please Email Results Hold

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☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: EPH | VPH | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B16-S1-5 | | 10/26/2022 | 1050 | soil | 1 | | | | | | | | | | | |
| B16-S2-7 | | 10/26/2022 | 1100 | soil | 1 | | | | | | | | | | | |
| B16-S3-15 | | 10/26/2022 | 1110 | soil | 1 | | | | | | | | | | | |
| B16-S5-25 | | 10/26/2022 | 1130 | soil | 1 | | | | | | | | | | | |
| B16-S10-50 | | 10/26/2022 | 1220 | soil | 1 | | | | | | | | | | | |
| B11-S1-5 | | 10/26/2022 | 1330 | soil | 1 | | | | | | | | | | | |
| B11-S1D | | 10/26/2022 | 1345 | soil | 1 | X | | | | | | | | | | |
| B11-S3-15 | | 10/26/2022 | 1350 | soil | 1 | | | | | | | | | | | |
| B11-S7-35 | | 10/26/2022 | 1430 | soil | 1 | | | | | | | | | | | |
| B11-S10-50 | | 10/26/2022 | 1445 | soil | 1 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 11/3/22 | 1015 |
| Received by: | | Katherine Porter | FAI | 11/03/22 | 12:18 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 14, 2022

Michael Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029

Re: Analytical Data for Project 210409
Laboratory Reference No. 2211-050

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on November 4, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures



This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 14, 2022
Samples Submitted: November 4, 2022
Laboratory Reference: 2211-050
Project: 210409

**Case Narrative**

Samples were collected on October 25, 2022 and received by the laboratory on November 4, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 14, 2022
Samples Submitted: November 4, 2022
Laboratory Reference: 2211-050
Project: 210409

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **B11-S3-15** | | | | | |
| Laboratory ID: | 11-050-20 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aromatic C10-C12 | **9.6** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aromatic C12-C13 | **120** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Total Aromatic: | **130** | | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 11-8-22 | 11-8-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 11-8-22 | 11-8-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 11-8-22 | 11-8-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 11-8-22 | 11-8-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 11-8-22 | 11-8-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 11-8-22 | 11-8-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *126* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 14, 2022
Samples Submitted: November 4, 2022
Laboratory Reference: 2211-050
Project: 210409

**VOLATILE PETROLEUM HYDROCARBONS**
**QUALITY CONTROL**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB1108S2 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 11-8-22 | 11-8-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 11-8-22 | 11-8-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 11-8-22 | 11-8-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 11-8-22 | 11-8-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 11-8-22 | 11-8-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 11-8-22 | 11-8-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 11-8-22 | 11-8-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *94* | *69-130* | | | | |

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPIKE BLANKS** | | | | | | | | | | | |
| Laboratory ID: | SB1108S1 | | | | | | | | | | |
| | SB | SBD | SB | SBD | | SB | SBD | | | | |
| Benzene | **0.972** | **0.961** | 1.00 | 1.00 | | **97** | **96** | 68-112 | 1 | 10 | |
| Toluene | **1.02** | **1.01** | 1.00 | 1.00 | | **102** | **101** | 70-114 | 1 | 10 | |
| Ethylbenzene | **0.987** | **0.973** | 1.00 | 1.00 | | **99** | **97** | 70-115 | 1 | 10 | |
| m,p-Xylene | **0.989** | **0.972** | 1.00 | 1.00 | | **99** | **97** | 69-117 | 2 | 11 | |
| o-Xylene | **0.995** | **0.982** | 1.00 | 1.00 | | **100** | **98** | 71-115 | 1 | 11 | |
| *Surrogate:* | | | | | | | | | | | |
| *Fluorobenzene* | | | | | | *97* | *96* | *69-130* | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Onsite 11-050

PROJECT NAME/NO. ~~210370~~ 210409

PO # C-378

REMARKS

Please Email Results Hold



TURNAROUND TIME

☐ Standard TAT

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

| | | | | | | ANALYSES REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | EPH | VPH | | | | | | | | | Notes |
| B13-S1-5 | 1 | 10/25/2022 | 930 | soil | 1 | | | | | | | | | | | |
| B13-S2-10 | 2 | 10/25/2022 | 945 | soil | 1 | | | | | | | | | | | |
| B13-S4-20 | 3 | 10/25/2022 | 1005 | soil | 1 | | | | | | | | | | | |
| B13-S10-50 | 4 | 10/25/2022 | 1110 | soil | 1 | | | | | | | | | | | X added 11/4/22. PB (STA) |
| B17-S1-5 | 5 | 10/25/2022 | 1305 | soil | 1 | | | | | | | | | | | |
| B17-S3-15 | 6 | 10/25/2022 | 1335 | soil | 1 | | | | | | | | | | | |
| B17-S5-25 | 7 | 10/25/2022 | 1355 | soil | 1 | | | | | | | | | | | |
| B17-S8-40 | 8 | 10/25/2022 | 1450 | soil | 1 | | | | | | | | | | | |
| B17-S1D | 9 | 10/25/2022 | 1315 | soil | 1 | | | | | | | | | | | |
| B14-S1-5 | 10 | 10/26/2022 | 850 | soil | 1 | | | | | | | | | | | |
| B14-S2-10 | 11 | 10/26/2022 | 900 | soil | 1 | | | | | | | | | | | |
| B14-S4-19 | 12 | 10/26/2022 | 920 | soil | 1 | | | | | | | | | | | |
| B14-S8-40 | 13 | 10/26/2022 | 1005 | soil | 1 | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 11/3/22 | 1015 |
| Received by: | | M. Voun | OSE | 11/3/22 | 1500 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Onsite 11-050

PROJECT NAME/NO. 210409

PO # C-378

REMARKS

Please Email Results Hold



TURNAROUND TIME

☐ Standard TAT

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

| | | | | | | ANALYSES REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | EPH | VPH | | | | | | | | | Notes |
| B16-S1-5 | 14 | 10/26/2022 | 1050 | soil | 1 | | | | | | | | | | | |
| B16-S2-7 | 15 | 10/26/2022 | 1100 | soil | 1 | | | | | | | | | | | |
| B16-S3-15 | 16 | 10/26/2022 | 1110 | soil | 1 | | | | | | | | | | | |
| B16-S5-25 | 17 | 10/26/2022 | 1130 | soil | 1 | | | | | | | | | | | |
| B16-S10-50 | 18 | 10/26/2022 | 1220 | soil | 1 | | | | | | | | | | | |
| B11-S1-5 | 19 | 10/26/2022 | 1330 | soil | 1 | | | | | | | | | | | |
| B11-S1D | 20 | 10/26/2022 | 1345 | soil | 1 | | X | | | | | | | | | |
| B11-S3-15 | 21 | 10/26/2022 | 1350 | soil | 1 | | | | | | | | | | | |
| B11-S7-35 | 22 | 10/26/2022 | 1430 | soil | 1 | | | | | | | | | | | |
| B11-S10-50 | 23 | 10/26/2022 | 1445 | soil | 1 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 11/3/22 | 1015 |
| Received by: | | M. VOUN | OSE | 11/3/22 | 1500 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 30, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on October 27, 2022 from the Kosmos, F&BI 210420 project. There are 27 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA1130R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 27, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos, F&BI 210420 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 210420 -01 | B11-W |

The sample was sent to Fremont Analytical for hexavalent chromium and EPH analyses. The report is enclosed.

The dissolved metals samples were filtered at Friedman and Bruya. The data were flagged accordingly.

Several metals in the 6020B and 1631E matrix spike and matrix spike duplicate failed the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 8260D laboratory control sample exceeded the acceptance criteria 2,2-dichloropropane. The compound was not detected, therefore the data were acceptable.

Several compounds in the 8270E laboratory control sample and laboratory control sample duplicate failed the acceptance criteria. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420
Date Extracted: 10/27/22
Date Analyzed: 10/28/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 51-134) |
|---|---|---|
| B11-W<br>210420-01 | <100 | 90 |
| Method Blank<br>02-2571 mb | <100 | 91 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420
Date Extracted: 10/28/22
Date Analyzed: 10/28/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 41-152) |
|---|---|---|---|
| B11-W<br>210420-01 | 72 x | <250 | 103 |
| Method Blank<br>02-2661 MB | <50 | <250 | 116 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-W f | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/27/22 | Project: | Kosmos, F&BI 210420 |
| Date Extracted: | 11/28/22 | Lab ID: | 210420-01 |
| Date Analyzed: | 11/28/22 | Data File: | 210420-01.135 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 4.22 |
| Barium | 38.7 |
| Cadmium | <1 |
| Lead | 2.15 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-W f | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/27/22 | Project: | Kosmos, F&BI 210420 |
| Date Extracted: | 11/28/22 | Lab ID: | 210420-01 x2 |
| Date Analyzed: | 11/29/22 | Data File: | 210420-01 x2.034 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | 4.84 |
| Copper | 28.9 |
| Nickel | 5.56 |
| Zinc | 18.4 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank f | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 210420 |
| Date Extracted: | 11/28/22 | Lab ID: | I2-838 mb |
| Date Analyzed: | 11/28/22 | Data File: | I2-838 mb.119 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/27/22 | Project: | Kosmos, F&BI 210420 |
| Date Extracted: | 11/15/22 | Lab ID: | 210420-01 |
| Date Analyzed: | 11/17/22 | Data File: | 210420-01.223 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 4.73 |
| Barium | 43.1 |
| Cadmium | <1 |
| Lead | 2.41 |
| Mercury | <1 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B11-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/27/22 | Project: | Kosmos, F&BI 210420 |
| Date Extracted: | 11/15/22 | Lab ID: | 210420-01 x2 |
| Date Analyzed: | 11/17/22 | Data File: | 210420-01 x2.101 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | 5.65 |
| Copper | 32.2 |
| Nickel | 6.07 |
| Zinc | 19.3 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 210420 |
| Date Extracted: | 11/15/22 | Lab ID: | I2-798 mb2 |
| Date Analyzed: | 11/15/22 | Data File: | I2-798 mb2.045 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420
Date Extracted: 11/28/22
Date Analyzed: 11/29/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Dissolved Mercury |
|---|---|
| B11-W f<br>210420-01 | 0.024 |
| Method Blank<br>i2-840 MB | <0.01 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420
Date Extracted: 11/06/22
Date Analyzed: 11/07/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| B11-W<br>210420-01 | 0.033 |
| Method Blank<br>i2-763 MB | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/27/22 | Project: | Kosmos, F&BI 210420 |
| Date Extracted: | 10/28/22 | Lab ID: | 210420-01 |
| Date Analyzed: | 10/28/22 | Data File: | 102837.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 78 | 126 |
| Toluene-d8 | 102 | 84 | 115 |
| 4-Bromofluorobenzene | 101 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210420 |
| Date Extracted: | 10/28/22 | Lab ID: | 02-2615 mb |
| Date Analyzed: | 10/28/22 | Data File: | 102833.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 110 | 78 | 126 |
| Toluene-d8 | 100 | 84 | 115 |
| 4-Bromofluorobenzene | 97 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | B11-W | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/27/22 | Project: | Kosmos, F&BI 210420 |
| Date Extracted: | 10/27/22 | Lab ID: | 210420-01 |
| Date Analyzed: | 10/31/22 | Data File: | 103117.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 67 | 11 | 173 |
| 2-Fluorobiphenyl | 76 | 44 | 108 |
| 2,4,6-Tribromophenol | 94 | 10 | 140 |
| Terphenyl-d14 | 85 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 jl |
| 2-Methylnaphthalene | <0.2 jl |
| 1-Methylnaphthalene | <0.2 jl |
| Acenaphthylene | <0.02 jl |
| Acenaphthene | <0.02 jl |
| Fluorene | <0.02 jl |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210420 |
| Date Extracted: | 10/27/22 | Lab ID: | 02-2650 mb2 |
| Date Analyzed: | 10/28/22 | Data File: | 102739.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | JCM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 80 | 11 | 173 |
| 2-Fluorobiphenyl | 77 | 44 | 108 |
| 2,4,6-Tribromophenol | 74 | 10 | 140 |
| Terphenyl-d14 | 84 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 jl |
| 2-Methylnaphthalene | <0.2 jl |
| 1-Methylnaphthalene | <0.2 jl |
| Acenaphthylene | <0.02 jl |
| Acenaphthene | <0.02 jl |
| Fluorene | <0.02 jl |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420
Date Extracted: 10/28/22
Date Analyzed: 10/31/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| B11-W<br>210420-01 | 170 |
| Method Blank<br>I2-774 MB | <5 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 210408-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 115 | 69-134 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 93 | 104 | 63-142 | 11 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 211333-06 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 109 | 107 | 75-125 | 2 |
| Barium | ug/L (ppb) | 50 | <1 | 97 | 95 | 75-125 | 2 |
| Cadmium | ug/L (ppb) | 5 | <1 | 93 | 91 | 75-125 | 2 |
| Chromium | ug/L (ppb) | 20 | 1.49 | 103 | 104 | 75-125 | 1 |
| Copper | ug/L (ppb) | 20 | <5 | 98 | 98 | 75-125 | 0 |
| Lead | ug/L (ppb) | 10 | <1 | 101 | 101 | 75-125 | 0 |
| Nickel | ug/L (ppb) | 20 | <1 | 97 | 97 | 75-125 | 0 |
| Selenium | ug/L (ppb) | 5 | <1 | 109 | 105 | 75-125 | 4 |
| Silver | ug/L (ppb) | 5 | <1 | 108 | 107 | 75-125 | 1 |
| Zinc | ug/L (ppb) | 50 | <5 | 96 | 96 | 75-125 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 91 | 80-120 |
| Barium | ug/L (ppb) | 50 | 96 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 91 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 102 | 80-120 |
| Copper | ug/L (ppb) | 20 | 101 | 80-120 |
| Lead | ug/L (ppb) | 10 | 97 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 99 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 92 | 80-120 |
| Silver | ug/L (ppb) | 5 | 99 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 211122-01 x10 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <10 | 85 | 79 | 75-125 | 7 |
| Barium | ug/L (ppb) | 50 | 20.7 | 104 | 102 | 75-125 | 2 |
| Cadmium | ug/L (ppb) | 5 | <10 | 96 | 94 | 75-125 | 2 |
| Chromium | ug/L (ppb) | 20 | 74.8 | 92 | 80 | 75-125 | 14 |
| Copper | ug/L (ppb) | 20 | 145 | 92 | 77 | 75-125 | 18 |
| Lead | ug/L (ppb) | 10 | <10 | 96 | 94 | 75-125 | 2 |
| Mercury | ug/L (ppb) | 5 | <10 | 70 vo | 73 vo | 75-125 | 4 |
| Nickel | ug/L (ppb) | 20 | 76.2 | 98 | 87 | 75-125 | 12 |
| Selenium | ug/L (ppb) | 5 | <10 | 127 vo | 57 vo | 75-125 | 76 vo |
| Silver | ug/L (ppb) | 5 | <10 | 65 vo | 65 vo | 75-125 | 0 |
| Zinc | ug/L (ppb) | 50 | 55.4 | 91 | 82 | 75-125 | 10 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 90 | 80-120 |
| Barium | ug/L (ppb) | 50 | 93 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 95 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 98 | 80-120 |
| Copper | ug/L (ppb) | 20 | 102 | 80-120 |
| Lead | ug/L (ppb) | 10 | 99 | 80-120 |
| Mercury | ug/L (ppb) | 5 | 95 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 93 | 80-120 |
| Silver | ug/L (ppb) | 5 | 95 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 97 | 93 | 68-125 | 4 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 210371-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 0.0012 | 15 vo | 65 vo | 71-125 | 125 vo |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 97 | 68-125 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 210408-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | <1 | 136 | 50-150 |
| Chloromethane | ug/L (ppb) | 10 | <10 | 123 | 50-150 |
| Vinyl chloride | ug/L (ppb) | 10 | <0.02 | 117 | 50-150 |
| Bromomethane | ug/L (ppb) | 10 | <5 | 121 | 50-150 |
| Chloroethane | ug/L (ppb) | 10 | <1 | 109 | 50-150 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | <1 | 108 | 50-150 |
| Acetone | ug/L (ppb) | 50 | <50 | 50 | 50-150 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | <1 | 56 | 50-150 |
| Hexane | ug/L (ppb) | 10 | <5 | 134 | 50-150 |
| Methylene chloride | ug/L (ppb) | 10 | <5 | 89 | 50-150 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 83 | 50-150 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | <1 | 83 | 50-150 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 117 | 50-150 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 93 | 50-150 |
| Chloroform | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | <20 | 69 | 50-150 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | <0.2 | 95 | 50-150 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | <1 | 88 | 50-150 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | <1 | 88 | 50-150 |
| Carbon tetrachloride | ug/L (ppb) | 10 | <0.5 | 90 | 50-150 |
| Benzene | ug/L (ppb) | 10 | <0.35 | 92 | 50-150 |
| Trichloroethene | ug/L (ppb) | 10 | <0.5 | 92 | 50-150 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| Bromodichloromethane | ug/L (ppb) | 10 | <0.5 | 103 | 50-150 |
| Dibromomethane | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | <10 | 99 | 50-150 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 101 | 50-150 |
| Toluene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 104 | 50-150 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | <0.5 | 102 | 50-150 |
| 2-Hexanone | ug/L (ppb) | 50 | <10 | 86 | 50-150 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Tetrachloroethene | ug/L (ppb) | 10 | <1 | 107 | 50-150 |
| Dibromochloromethane | ug/L (ppb) | 10 | <0.5 | 105 | 50-150 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Chlorobenzene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Ethylbenzene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| m,p-Xylene | ug/L (ppb) | 20 | <2 | 103 | 50-150 |
| o-Xylene | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| Styrene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Isopropylbenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| Bromoform | ug/L (ppb) | 10 | <5 | 97 | 50-150 |
| n-Propylbenzene | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| Bromobenzene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | <0.2 | 113 | 50-150 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| tert-Butylbenzene | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| sec-Butylbenzene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | <10 | 100 | 50-150 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | <0.5 | 115 | 50-150 |
| Naphthalene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | 101 | 95 | 46-206 | 6 |
| Chloromethane | ug/L (ppb) | 10 | 113 | 108 | 70-142 | 5 |
| Vinyl chloride | ug/L (ppb) | 10 | 108 | 105 | 70-130 | 3 |
| Bromomethane | ug/L (ppb) | 10 | 114 | 110 | 56-197 | 4 |
| Chloroethane | ug/L (ppb) | 10 | 110 | 105 | 70-130 | 5 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | 107 | 106 | 70-130 | 1 |
| Acetone | ug/L (ppb) | 50 | 46 | 47 | 10-140 | 2 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | 106 | 106 | 70-130 | 0 |
| Hexane | ug/L (ppb) | 10 | 129 | 128 | 54-136 | 1 |
| Methylene chloride | ug/L (ppb) | 10 | 114 | 113 | 43-134 | 1 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | 101 | 97 | 70-130 | 4 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | 111 | 108 | 70-130 | 3 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | 105 | 103 | 70-130 | 2 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | 139 vo | 141 vo | 70-130 | 1 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | 107 | 105 | 70-130 | 2 |
| Chloroform | ug/L (ppb) | 10 | 106 | 108 | 70-130 | 2 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 75 | 76 | 17-154 | 1 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | 100 | 101 | 70-130 | 1 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | 104 | 102 | 70-130 | 2 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | 106 | 104 | 70-130 | 2 |
| Carbon tetrachloride | ug/L (ppb) | 10 | 105 | 104 | 70-130 | 1 |
| Benzene | ug/L (ppb) | 10 | 104 | 105 | 70-130 | 1 |
| Trichloroethene | ug/L (ppb) | 10 | 98 | 99 | 70-130 | 1 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | 102 | 100 | 70-130 | 2 |
| Bromodichloromethane | ug/L (ppb) | 10 | 104 | 105 | 70-130 | 1 |
| Dibromomethane | ug/L (ppb) | 10 | 103 | 105 | 70-130 | 2 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 100 | 100 | 68-130 | 0 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | 104 | 107 | 69-131 | 3 |
| Toluene | ug/L (ppb) | 10 | 105 | 107 | 70-130 | 2 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | 103 | 109 | 70-130 | 6 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | 101 | 103 | 70-130 | 2 |
| 2-Hexanone | ug/L (ppb) | 50 | 85 | 88 | 45-138 | 3 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | 107 | 108 | 70-130 | 1 |
| Tetrachloroethene | ug/L (ppb) | 10 | 111 | 112 | 70-130 | 1 |
| Dibromochloromethane | ug/L (ppb) | 10 | 109 | 108 | 60-148 | 1 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | 102 | 105 | 70-130 | 3 |
| Chlorobenzene | ug/L (ppb) | 10 | 104 | 103 | 70-130 | 1 |
| Ethylbenzene | ug/L (ppb) | 10 | 105 | 105 | 70-130 | 0 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | 101 | 102 | 70-130 | 1 |
| m,p-Xylene | ug/L (ppb) | 20 | 104 | 105 | 70-130 | 1 |
| o-Xylene | ug/L (ppb) | 10 | 103 | 103 | 70-130 | 0 |
| Styrene | ug/L (ppb) | 10 | 103 | 104 | 70-130 | 1 |
| Isopropylbenzene | ug/L (ppb) | 10 | 107 | 105 | 70-130 | 2 |
| Bromoform | ug/L (ppb) | 10 | 100 | 100 | 69-138 | 0 |
| n-Propylbenzene | ug/L (ppb) | 10 | 103 | 105 | 70-130 | 2 |
| Bromobenzene | ug/L (ppb) | 10 | 99 | 102 | 70-130 | 3 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | 104 | 104 | 70-130 | 0 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | 114 | 113 | 70-130 | 1 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | 97 | 99 | 70-130 | 2 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | 99 | 100 | 70-130 | 1 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | 102 | 103 | 70-130 | 1 |
| tert-Butylbenzene | ug/L (ppb) | 10 | 101 | 107 | 70-130 | 6 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | 102 | 103 | 70-130 | 1 |
| sec-Butylbenzene | ug/L (ppb) | 10 | 102 | 105 | 70-130 | 3 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | 103 | 106 | 70-130 | 3 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | 103 | 103 | 70-130 | 0 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | 103 | 106 | 70-130 | 3 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | 102 | 102 | 70-130 | 0 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | 98 | 100 | 70-130 | 2 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | 102 | 105 | 70-130 | 3 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | 110 | 111 | 70-130 | 1 |
| Naphthalene | ug/L (ppb) | 10 | 100 | 100 | 70-130 | 0 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | 101 | 103 | 70-130 | 2 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.5

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 5 | 57 vo | 66 | 62-97 | 15 |
| 2-Methylnaphthalene | ug/L (ppb) | 5 | 61 vo | 67 | 64-101 | 9 |
| 1-Methylnaphthalene | ug/L (ppb) | 5 | 61 vo | 68 | 64-93 | 11 |
| Acenaphthylene | ug/L (ppb) | 5 | 65 vo | 76 | 70-130 | 16 |
| Acenaphthene | ug/L (ppb) | 5 | 68 vo | 74 | 70-130 | 8 |
| Fluorene | ug/L (ppb) | 5 | 68 vo | 75 | 70-130 | 10 |
| Phenanthrene | ug/L (ppb) | 5 | 71 | 77 | 70-130 | 8 |
| Anthracene | ug/L (ppb) | 5 | 72 | 81 | 70-130 | 12 |
| Fluoranthene | ug/L (ppb) | 5 | 79 | 87 | 70-130 | 10 |
| Pyrene | ug/L (ppb) | 5 | 78 | 83 | 70-130 | 6 |
| Benz(a)anthracene | ug/L (ppb) | 5 | 76 | 83 | 70-130 | 9 |
| Chrysene | ug/L (ppb) | 5 | 77 | 85 | 70-130 | 10 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 78 | 85 | 70-130 | 9 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 76 | 84 | 70-130 | 10 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 80 | 87 | 70-130 | 8 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 81 | 84 | 70-130 | 4 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 79 | 86 | 70-130 | 8 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 5 | 78 | 85 | 70-130 | 9 |

Date of Report: 11/30/22
Date Received: 10/27/22
Project: Kosmos, F&BI 210420

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| TSS | mg/L (ppm) | 20 | 102 | 102 | 35-146 | 0 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

210420

# SAMPLE CHAIN OF CUSTODY

10/27/22

AI3/E03/VW3

Page # 1 of 1

Report To Angie Goodwin

Company Haley & Aldrich

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

| PROJECT NAME | PO # |
|---|---|
| Kosmos | |
| REMARKS<br>Project specific RLs? - Yes / No | INVOICE TO |

TURNAROUND TIME
- ☒ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | ~~PCBs EPA 8082~~ TSS | ~~CrVI~~ Tot/D Sulfide | ~~VPH~~ | ~~EPH~~ | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B11-W | 01A-P | 10/26/22 | 1600 | water | 16 | X | X | | | X | X | X | X | X | X | X | Take metals from TSS poly, they are NOT field filtered |
| | | | | | | | | | | | | | | | | Hold VPH per AG 10/28/22 ME |
| | | | | | | | | | | | | | | | | |
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| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Yakahara | H&A | 10/27 | 10:00 |
| Received by: | Khan Phan | FEBI | 10/27/22 | 10:00 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 0°C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 210420**
**Work Order Number: 2210543**

November 16, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 1 sample(s) on 10/27/2022 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***
***Hexavalent Chromium by SM 3500 Cr B***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

**Date:** *11/16/2022*

**CLIENT:** Friedman & Bruya
**Project:** 210420
**Work Order:** 2210543

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2210543-001 | B11-W | 10/26/2022 4:00 PM | 10/27/2022 1:18 PM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

# Case Narrative

WO#: **2210543**
Date: **11/16/2022**

**CLIENT:** Friedman & Bruya
**Project:** 210420

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2210543**
Date Reported: **11/16/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/26/2022 4:00:00 PM
**Project:** 210420
**Lab ID:** 2210543-001
**Matrix:** Water
**Client Sample ID:** **B11-W**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38350 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 83.0 | | µg/L | 1 | 11/11/2022 12:23:54 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 41.5 | | µg/L | 1 | 11/11/2022 12:23:54 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 41.5 | | µg/L | 1 | 11/11/2022 12:23:54 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 41.5 | | µg/L | 1 | 11/11/2022 12:23:54 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 41.5 | | µg/L | 1 | 11/11/2022 12:23:54 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 83.0 | | µg/L | 1 | 11/14/2022 11:30:26 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 41.5 | Q | µg/L | 1 | 11/14/2022 11:30:26 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 41.5 | | µg/L | 1 | 11/14/2022 11:30:26 AM |
| Aromatic Hydrocarbon (C16-C21) | 43.4 | 41.5 | | µg/L | 1 | 11/14/2022 11:30:26 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 41.5 | | µg/L | 1 | 11/14/2022 11:30:26 AM |
| Surr: 1-Chlorooctadecane | 9.36 | 50 - 150 | S | %Rec | 1 | 11/11/2022 12:23:54 PM |
| Surr: o-Terphenyl | 62.0 | 50 - 150 | | %Rec | 1 | 11/14/2022 11:30:26 AM |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.
Q - Associated calibration verification is below acceptance criteria (76%, nominal 80-120). Result may be low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79415 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | H | mg/L | 1 | 10/31/2022 8:31:00 AM |

**Work Order:** 2210543
**CLIENT:** Friedman & Bruya
**Project:** 210420

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **MB-79415** | SampType: **MBLK** | | | Units: **mg/L** | | Prep Date: **10/31/2022** | | RunNo: **79415** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R79415** | | | | | Analysis Date: **10/31/2022** | | SeqNo: **1636369** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0450 | | | | | | | | | |

| Sample ID: **LCS-79415** | SampType: **LCS** | | | Units: **mg/L** | | Prep Date: **10/31/2022** | | RunNo: **79415** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R79415** | | | | | Analysis Date: **10/31/2022** | | SeqNo: **1636370** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.262 | 0.0450 | 0.2500 | 0 | 105 | 82.2 | 115 | | | | |

| Sample ID: **2210543-001ADUP** | SampType: **DUP** | | | Units: **mg/L** | | Prep Date: **10/31/2022** | | RunNo: **79415** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **B11-W** | Batch ID: **R79415** | | | | | Analysis Date: **10/31/2022** | | SeqNo: **1636372** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0450 | | | | | | 0 | | 20 | H |

| Sample ID: **2210543-001AMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **10/31/2022** | | RunNo: **79415** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **B11-W** | Batch ID: **R79415** | | | | | Analysis Date: **10/31/2022** | | SeqNo: **1636373** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.267 | 0.0450 | 0.2500 | 0 | 107 | 59.4 | 125 | | | | H |

| Sample ID: **2210543-001AMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **10/31/2022** | | RunNo: **79415** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **B11-W** | Batch ID: **R79415** | | | | | Analysis Date: **10/31/2022** | | SeqNo: **1636374** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.268 | 0.0450 | 0.2500 | 0 | 107 | 59.4 | 125 | 0.2668 | 0.411 | 20 | H |

**Work Order:** 2210543
**CLIENT:** Friedman & Bruya
**Project:** 210420

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **MB-38350** | SampType: **MBLK** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **38350** | | Analysis Date: **11/11/2022** | SeqNo: **1645815** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 80.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 40.0 | | 0 | 0 | | | | | | |
| Surr: 1-Chlorooctadecane | 259 | | 400.0 | | 64.8 | 50 | 150 | | | | |

| Sample ID: **LCS-38350** | SampType: **LCS** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **38350** | | Analysis Date: **11/11/2022** | SeqNo: **1645817** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 344 | 80.0 | 1,000 | 0 | 34.4 | 5.88 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 307 | 40.0 | 500.0 | 0 | 61.4 | 25.3 | 107 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 391 | 40.0 | 500.0 | 0 | 78.1 | 42.5 | 113 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 397 | 40.0 | 500.0 | 0 | 79.3 | 42.7 | 118 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 370 | 40.0 | 500.0 | 0 | 73.9 | 27.8 | 137 | | | | |
| Surr: 1-Chlorooctadecane | 302 | | 400.0 | | 75.4 | 50 | 150 | | | | |

| Sample ID: **2210513-001BMS** | SampType: **MS** | Units: **µg/L** | Prep Date: **11/1/2022** | RunNo: **79793** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **38350** | | Analysis Date: **11/11/2022** | SeqNo: **1645820** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 319 | 82.3 | 1,029 | 0 | 31.0 | 5 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 277 | 41.2 | 514.5 | 0 | 53.8 | 17.1 | 108 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 365 | 41.2 | 514.5 | 0 | 70.9 | 35.7 | 111 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 410 | 41.2 | 514.5 | 0 | 79.6 | 41.1 | 110 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 404 | 41.2 | 514.5 | 0 | 78.6 | 31.4 | 125 | | | | |
| Surr: 1-Chlorooctadecane | 305 | | 411.6 | | 74.0 | 50 | 150 | | | | |

**Work Order:** 2210543
**CLIENT:** Friedman & Bruya
**Project:** 210420

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2210543-001BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **11/1/2022** RunNo: **79793**
Client ID: **B11-W** Batch ID: **38350** Analysis Date: **11/11/2022** SeqNo: **1645830**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 83.3 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Surr: 1-Chlorooctadecane | 36.6 | | 416.6 | | 8.78 | 50 | 150 | | 0 | | S |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.

Sample ID: **MB-38350** SampType: **MBLK** Units: **µg/L** Prep Date: **11/1/2022** RunNo: **79793**
Client ID: **MBLKW** Batch ID: **38350** Analysis Date: **11/14/2022** SeqNo: **1646658**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 80.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | | | | Q |
| Aromatic Hydrocarbon (C12-C16) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 40.0 | | 0 | 0 | | | | | | |
| Surr: o-Terphenyl | 417 | | 400.0 | | 104 | 50 | 150 | | | | |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria (76%, nominal 80-120). Result may be low-biased.

Sample ID: **2210543-001BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **11/1/2022** RunNo: **79793**
Client ID: **B11-W** Batch ID: **38350** Analysis Date: **11/14/2022** SeqNo: **1646665**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 83.3 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C10-C12) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | Q |
| Aromatic Hydrocarbon (C12-C16) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C16-C21) | 48.5 | 41.7 | | 0 | 0 | | | 43.41 | 11.2 | 25 | |
| Aromatic Hydrocarbon (C21-C34) | ND | 41.7 | | 0 | 0 | | | 0 | | 25 | |
| Surr: o-Terphenyl | 293 | | 416.6 | | 70.2 | 50 | 150 | | 0 | | |

**Work Order:** 2210543
**CLIENT:** Friedman & Bruya
**Project:** 210420

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2210543-001BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **11/1/2022** RunNo: **79793**
Client ID: **B11-W** Batch ID: **38350** Analysis Date: **11/14/2022** SeqNo: **1646665**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|

**NOTES:**
Q - Associated calibration verification is below acceptance criteria (76%, nominal 80-120). Result may be low-biased.

Sample ID: **LCS-38350** SampType: **LCS** Units: **µg/L** Prep Date: **11/1/2022** RunNo: **79793**
Client ID: **LCSW** Batch ID: **38350** Analysis Date: **11/14/2022** SeqNo: **1646667**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 548 | 80.0 | 1,000 | 0 | 54.8 | 25.2 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 336 | 40.0 | 500.0 | 0 | 67.3 | 46.2 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 389 | 40.0 | 500.0 | 0 | 77.7 | 39.9 | 107 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 567 | 40.0 | 500.0 | 0 | 113 | 53.4 | 125 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 570 | 40.0 | 500.0 | 0 | 114 | 46.5 | 138 | | | | |
| Surr: o-Terphenyl | 388 | | 400.0 | | 97.1 | 50 | 150 | | | | |

Sample ID: **2210513-001BMS** SampType: **MS** Units: **µg/L** Prep Date: **11/1/2022** RunNo: **79793**
Client ID: **BATCH** Batch ID: **38350** Analysis Date: **11/14/2022** SeqNo: **1646668**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 506 | 82.3 | 1,029 | 0 | 49.2 | 9.66 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 313 | 41.2 | 514.5 | 0 | 60.8 | 18 | 105 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 424 | 41.2 | 514.5 | 0 | 82.4 | 45.3 | 109 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 369 | 41.2 | 514.5 | 33.86 | 65.2 | 40.6 | 118 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 401 | 41.2 | 514.5 | 0 | 77.9 | 38.1 | 137 | | | | |
| Surr: o-Terphenyl | 284 | | 411.6 | | 69.0 | 50 | 150 | | | | |

Fremont Analytical

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2210543 |
| Logged by: | Elisabeth Samoray | Date Received: | 10/27/2022 1:18:00 PM |

## Chain of Custody

| | | | | |
|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | |

## Log In

| | | | | |
|---|---|---|---|---|
| 3. | Coolers are present? | Yes ☑ | No ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes ☑ | No ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes ☐ | No ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes ☑ | No ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 10. | Are samples properly preserved? | Yes ☑ | No ☐ | |
| 11. | Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes ☐ | No ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes ☑ | No ☐ | |
| 14. | Does paperwork match bottle labels? | Yes ☑ | No ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 16. | Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 17. | Were all holding times able to be met? | Yes ☐ | No ☑ | |

## Special Handling (if applicable)

| | | | | |
|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes ☑ | No ☐ | NA ☐ |

| | | | |
|---|---|---|---|
| Person Notified: | Michael Erdahl | Date: | 10/27/2022 |
| By Whom: | Elisabeth Samoray | Via: | ☑ eMail ☐ Phone ☐ Fax ☐ In Person |
| Regarding: | Not being able to run sample in hold | | |
| Client Instructions: | Proceed out of hold | | |

19. Additional remarks:

Item Information

| Item # | Temp °C |
|---|---|
| Sample 1 | 5.3 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2210543

Page # 1 of 1

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Framat
PROJECT NAME/NO. 210420
PO # C-375
REMARKS

TURNAROUND TIME
☑ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Cr VI | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BHW | | 10/27/22 | 1600 | $H_2O$ | 2 | | | | X | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
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*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*


| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 10/27/22 | 1108 |
| Received by: | Clare O'Connor | Clare O'Connor | FAI | 10/27/22 | 13:18 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2210543

Page # 1 of 1


Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com


SUBCONTRACTER Fremont

| PROJECT NAME/NO. | PO # |
|---|---|
| 210420 | C-375 |

REMARKS

Updated per MEs request - ES 10/28/22

TURNAROUND TIME

☑ Standard TAT

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Cr VI | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BHW | | ~~10/27/22~~ 10/26/22 | 1600 | $H_2O$ | 2 | | | | X | | | | | | |
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*Friedman & Bruya, Inc.*
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| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| ~~Relinquished~~ by: | | Michael Erdahl | Friedman & Bruya | 10/27/22 | 1108 |
| Received by: | Clare O'Connor | Clare O'Connor | FAI | 10/27/22 | 13:18 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2210543

Page # 1 of 1



Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Framat

PROJECT NAME/NO. 210420

PO # C-375

REMARKS

Updated per MEs request - ES 10/28/22

TURNAROUND TIME

☑ Standard TAT

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Cr VI | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BltW | | ~~10/27/22~~ 10/26/22 | 1600 | $H_2O$ | 2 | | X | | X | | | | | | X=run per ME 10/28/22 -cg |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| ~~Relinquished by:~~ | | Michael Erdahl | Friedman & Bruya | 10/27/22 | 1108 |
| Received by: | Clare O'Connor | Clare O'Connor | FAI | 10/27/22 | 13:18 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 30, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on October 28, 2022 from the Kosmos, F&BI 210464 project. There are 67 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA1130R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 28, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos, F&BI 210464 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 210464 -01 | MW3D-S1-5 |
| 210464 -02 | MW3D-S2-10 |
| 210464 -03 | MW3D-S3-15 |
| 210464 -04 | MW3D-S4-20 |
| 210464 -05 | MW3D-S5-25 |
| 210464 -06 | MW3D-S6-30 |
| 210464 -07 | MW3D-S7-35 |
| 210464 -08 | MW3D-S8-40 |
| 210464 -09 | MW3D-S9-45 |
| 210464 -10 | MW3D-S10-50 |
| 210464 -11 | MW3D-S11-55 |
| 210464 -12 | MW3D-S12-60 |
| 210464 -13 | MW4D-S1-3 |
| 210464 -14 | MW4D-S2-10 |
| 210464 -15 | MW4D-S3-15 |
| 210464 -16 | MW4D-S4-20 |
| 210464 -17 | MW4D-S5-25 |
| 210464 -18 | MW4D-S6-30 |
| 210464 -19 | MW4D-S7-35 |
| 210464 -20 | MW4D-S8-40 |
| 210464 -21 | MW4D-S9-45 |
| 210464 -22 | MW4D-S10-50 |
| 210464 -23 | MW4D-S11-55 |
| 210464 -24 | MW2D-S1-5 |
| 210464 -25 | MW2D-S1-5-DUP |
| 210464 -26 | MW2D-S2-10 |
| 210464 -27 | MW2D-S3-15 |
| 210464 -28 | MW2D-S4-20 |
| 210464 -29 | MW2D-S5-25 |
| 210464 -30 | MW2D-S6-30 |
| 210464 -31 | MW2D-S7-35 |
| 210464 -32 | MW2D-S8-40 |
| 210464 -33 | MW2D-S9-45 |
| 210464 -34 | MW2D-S10-50 |
| 210464 -35 | MW2D-S11-55 |

CASE NARRATIVE (continued)

Samples MW3D-S1-5, MW3D-S2-10, MW3D-S4-20, MW2D-S1-5, MW2D-S1-5-DUP , and MW2D-S2-10 were sent to Fremont Analytical for EPH analysis and to Onsite Environmental for VPH analysis. The report is enclosed.

Selenium in the 6020B matrix spike and matrix spike duplicate did not meet the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 8260D calibration standard failed the acceptance criteria for several compounds. The data were flagged accordingly.

The 8260D laboratory control sample exceeded the acceptance criteria for acetone. The compound was not detected, therefore the data were acceptable.

An 8270E internal standard failed the acceptance criteria for sample MW3D-S2-10. The sample was diluted and reanalyzed with acceptable results. Both data sets were reported.

All other quality control requirements were acceptable.

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464
Date Extracted: 11/10/22
Date Analyzed: 11/10/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| MW3D-S1-5<br>210464-01 | 240 | ip |
| MW3D-S2-10<br>210464-02 | 290 | ip |
| MW3D-S3-15<br>210464-03 | <5 | 102 |
| MW3D-S4-20<br>210464-04 | <5 | 97 |
| MW3D-S5-25<br>210464-05 | <5 | 97 |
| MW3D-S11-55<br>210464-11 | <5 | 96 |
| MW4D-S1-3<br>210464-13 | <5 | 103 |
| MW4D-S2-10<br>210464-14 | <5 | 99 |
| MW4D-S3-15<br>210464-15 | <5 | 105 |
| MW4D-S5-25<br>210464-17 | <5 | 98 |
| MW4D-S8-40<br>210464-20 | <5 | 105 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464
Date Extracted: 11/10/22
Date Analyzed: 11/10/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| MW2D-S1-5<br>210464-24 | <5 | 97 |
| MW2D-S1-5-DUP<br>210464-25 | <5 | 99 |
| MW2D-S2-10<br>210464-26 | <5 | 107 |
| MW2D-S3-15<br>210464-27 | <5 | 94 |
| MW2D-S4-20<br>210464-28 | <5 | 103 |
| MW2D-S8-40<br>210464-32 | <5 | 95 |
| Method Blank<br>02-2711 MB | <5 | 93 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464
Date Extracted: 11/10/22
Date Analyzed: 11/10/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|---|
| MW3D-S1-5<br>210464-01 | 450 | <250 | 102 |
| MW3D-S2-10<br>210464-02 | 520 | <250 | 107 |
| MW3D-S3-15<br>210464-03 | <50 | <250 | 100 |
| MW3D-S4-20<br>210464-04 | <50 | <250 | 106 |
| MW3D-S5-25<br>210464-05 | <50 | <250 | 106 |
| MW3D-S11-55<br>210464-11 | <50 | <250 | 112 |
| MW4D-S1-3<br>210464-13 | <50 | <250 | 112 |
| MW4D-S2-10<br>210464-14 | <50 | <250 | 106 |
| MW4D-S3-15<br>210464-15 | <50 | <250 | 106 |
| MW4D-S5-25<br>210464-17 | <50 | <250 | 105 |
| MW4D-S8-40<br>210464-20 | <50 | <250 | 103 |
| MW2D-S1-5<br>210464-24 | <50 | <250 | 101 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464
Date Extracted: 11/10/22
Date Analyzed: 11/10/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|---|
| MW2D-S1-5-DUP<br>210464-25 | <50 | <250 | 104 |
| MW2D-S2-10<br>210464-26 | <50 | <250 | 107 |
| MW2D-S3-15<br>210464-27 | <50 | <250 | 102 |
| MW2D-S4-20<br>210464-28 | <50 | <250 | 108 |
| MW2D-S8-40<br>210464-32 | <50 | <250 | 98 |
| Method Blank<br>02-2746 MB | <50 | <250 | 95 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW3D-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-01 |
| Date Analyzed: | 11/11/22 | Data File: | 210464-01.121 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.92 |
| Barium | 125 |
| Cadmium | <1 |
| Lead | 3.00 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW3D-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-01 x5 |
| Date Analyzed: | 11/28/22 | Data File: | 210464-01 x5.040 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 25.3 |
| Copper | 69.7 |
| Nickel | 21.0 |
| Zinc | 52.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW3D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-02 |
| Date Analyzed: | 11/16/22 | Data File: | 210464-02.149 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.43 |
| Barium | 50.7 |
| Cadmium | <1 |
| Lead | 2.24 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW3D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-02 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-02 x5.116 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 13.6 |
| Copper | 52.5 |
| Nickel | 13.3 |
| Zinc | 48.8 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW3D-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-05 |
| Date Analyzed: | 11/16/22 | Data File: | 210464-05.150 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.26 |
| Barium | 52.7 |
| Cadmium | <1 |
| Lead | 2.43 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW3D-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-05 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-05 x5.125 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 9.76 |
| Copper | 49.0 |
| Nickel | 9.23 |
| Zinc | 49.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW4D-S1-3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-13 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-13.151 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.06 |
| Barium | 63.0 |
| Cadmium | <1 |
| Lead | 2.22 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW4D-S1-3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-13 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-13 x5.126 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 16.0 |
| Copper | 51.0 |
| Nickel | 15.7 |
| Zinc | 52.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW4D-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-17 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-17.152 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.27 |
| Barium | 49.2 |
| Cadmium | <1 |
| Lead | 2.49 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW4D-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-17 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-17 x5.127 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 13.6 |
| Copper | 46.4 |
| Nickel | 21.8 |
| Zinc | 45.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW2D-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-24 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-24.157 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.59 |
| Barium | 162 |
| Cadmium | <1 |
| Lead | 3.49 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW2D-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-24 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-24 x5.128 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 32.6 |
| Copper | 89.5 |
| Nickel | 24.0 |
| Zinc | 58.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW2D-S1-5-DUP | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-25 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-25.158 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.29 |
| Barium | 161 |
| Cadmium | <1 |
| Lead | 3.73 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW2D-S1-5-DUP | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-25 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-25 x5.138 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 27.6 |
| Copper | 83.4 |
| Nickel | 21.9 |
| Zinc | 54.1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW2D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-26 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-26.159 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 1.56 |
| Barium | 88.6 |
| Cadmium | <1 |
| Lead | 2.53 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW2D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-26 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-26 x5.139 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 43.6 |
| Copper | 109 |
| Nickel | 31.4 |
| Zinc | 96.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW2D-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-28 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-28.160 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.76 |
| Barium | 35.0 |
| Cadmium | <1 |
| Lead | 2.00 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW2D-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-28 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 210464-28 x5.140 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 12.7 |
| Copper | 61.8 |
| Nickel | 14.8 |
| Zinc | 46.4 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | I2-795 mb |
| Date Analyzed: | 11/18/22 | Data File: | I2-795 mb.103 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464
Date Extracted: 11/10/22
Date Analyzed: 11/15/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| MW3D-S1-5<br>210464-01 | <0.1 |
| MW3D-S2-10<br>210464-02 | <0.1 |
| MW3D-S5-25<br>210464-05 | <0.1 |
| MW4D-S1-3<br>210464-13 | <0.1 |
| MW4D-S5-25<br>210464-17 | <0.1 |
| MW2D-S1-5<br>210464-24 | 0.17 |
| MW2D-S1-5-DUP<br>210464-25 | 0.17 |
| MW2D-S2-10<br>210464-26 | <0.1 |
| MW2D-S4-20<br>210464-28 | <0.1 |
| Method Blank<br>i2-795 MB | <0.1 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-01 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111009.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 84 | 120 |
| Toluene-d8 | 104 | 73 | 128 |
| 4-Bromofluorobenzene | 118 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 ca |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | 0.0032 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | 0.0037 |
| Hexane | <0.25 | o-Xylene | 0.0088 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | 0.091 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | 0.20 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | 0.096 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | 0.24 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0026 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-02 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111010.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 84 | 120 |
| Toluene-d8 | 114 | 73 | 128 |
| 4-Bromofluorobenzene | 113 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 ca |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | 0.0027 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | 0.0074 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | 0.10 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | 0.17 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | 0.14 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-03 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111011.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | 84 | 120 |
| Toluene-d8 | 91 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 ca |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-04 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111012.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 88 | 84 | 120 |
| Toluene-d8 | 90 | 73 | 128 |
| 4-Bromofluorobenzene | 94 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 ca |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-05 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111013.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 84 | 120 |
| Toluene-d8 | 101 | 73 | 128 |
| 4-Bromofluorobenzene | 95 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 ca |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S11-55 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-11 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111014.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 84 | 120 |
| Toluene-d8 | 102 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 ca |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW4D-S1-3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-13 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111015.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 84 | 120 |
| Toluene-d8 | 101 | 73 | 128 |
| 4-Bromofluorobenzene | 97 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 ca |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW4D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-14 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111016.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 84 | 120 |
| Toluene-d8 | 102 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 ca |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW4D-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-15 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111017.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | 84 | 120 |
| Toluene-d8 | 91 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 ca |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW4D-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-17 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111018.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 84 | 120 |
| Toluene-d8 | 99 | 73 | 128 |
| 4-Bromofluorobenzene | 97 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 ca |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW4D-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-20 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111024.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 84 | 120 |
| Toluene-d8 | 101 | 73 | 128 |
| 4-Bromofluorobenzene | 95 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-24 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111025.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 84 | 120 |
| Toluene-d8 | 100 | 73 | 128 |
| 4-Bromofluorobenzene | 99 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S1-5-DUP | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-25 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111026.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 84 | 120 |
| Toluene-d8 | 101 | 73 | 128 |
| 4-Bromofluorobenzene | 97 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-26 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111027.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 84 | 120 |
| Toluene-d8 | 100 | 73 | 128 |
| 4-Bromofluorobenzene | 99 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-27 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111028.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 84 | 120 |
| Toluene-d8 | 99 | 73 | 128 |
| 4-Bromofluorobenzene | 93 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-28 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111029.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 84 | 120 |
| Toluene-d8 | 100 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-32 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111030.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | 84 | 120 |
| Toluene-d8 | 90 | 73 | 128 |
| 4-Bromofluorobenzene | 99 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 ca | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 02-2644 mb 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111008.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 84 | 120 |
| Toluene-d8 | 100 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-01 |
| Date Analyzed: | 11/12/22 | Data File: | 111223.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 101 | 10 | 198 |
| 2-Fluorobiphenyl | 92 | 45 | 117 |
| 2,4,6-Tribromophenol | 108 | 11 | 158 |
| Terphenyl-d14 | 108 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.0074 |
| 1-Methylnaphthalene | 0.076 |
| Acenaphthylene | <0.002 |
| Acenaphthene | 0.028 |
| Fluorene | 0.11 |
| Phenanthrene | 0.14 |
| Anthracene | <0.002 |
| Fluoranthene | 0.0080 |
| Pyrene | 0.018 |
| Benz(a)anthracene | <0.002 |
| Chrysene | 0.0086 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-02 |
| Date Analyzed: | 11/13/22 | Data File: | 111248.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 91 | 10 | 198 |
| 2-Fluorobiphenyl | 83 J | 45 | 117 |
| 2,4,6-Tribromophenol | 88 J | 11 | 158 |
| Terphenyl-d14 | 122 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | 0.076 |
| 1-Methylnaphthalene | 0.12 |
| Acenaphthylene | <0.002 J |
| Acenaphthene | 0.015 J |
| Fluorene | 0.17 J |
| Phenanthrene | 0.32 J |
| Anthracene | <0.002 J |
| Fluoranthene | 0.0095 J |
| Pyrene | 0.033 |
| Benz(a)anthracene | <0.002 |
| Chrysene | 0.0079 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-02 1/5 |
| Date Analyzed: | 11/15/22 | Data File: | 111523.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 89 d | 10 | 198 |
| 2-Fluorobiphenyl | 93 d | 45 | 117 |
| 2,4,6-Tribromophenol | 80 d | 11 | 158 |
| Terphenyl-d14 | 111 d | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Acenaphthylene | <0.01 |
| Acenaphthene | 0.017 |
| Fluorene | 0.18 |
| Phenanthrene | 0.33 |
| Anthracene | <0.01 |
| Fluoranthene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-03 |
| Date Analyzed: | 11/13/22 | Data File: | 111249.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 43 | 10 | 198 |
| 2-Fluorobiphenyl | 68 | 45 | 117 |
| 2,4,6-Tribromophenol | 83 | 11 | 158 |
| Terphenyl-d14 | 113 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-04 |
| Date Analyzed: | 11/13/22 | Data File: | 111250.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 47 | 10 | 198 |
| 2-Fluorobiphenyl | 72 | 45 | 117 |
| 2,4,6-Tribromophenol | 84 | 11 | 158 |
| Terphenyl-d14 | 116 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW3D-S5-25 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-05 |
| Date Analyzed: | 11/13/22 | Data File: | 111251.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 37 | 10 | 198 |
| 2-Fluorobiphenyl | 62 | 45 | 117 |
| 2,4,6-Tribromophenol | 74 | 11 | 158 |
| Terphenyl-d14 | 107 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | 0.0021 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW4D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-14 |
| Date Analyzed: | 11/14/22 | Data File: | 111414.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 58 | 10 | 198 |
| 2-Fluorobiphenyl | 68 | 45 | 117 |
| 2,4,6-Tribromophenol | 89 | 11 | 158 |
| Terphenyl-d14 | 94 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW4D-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-15 |
| Date Analyzed: | 11/11/22 | Data File: | 111111.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 45 | 10 | 198 |
| 2-Fluorobiphenyl | 65 | 45 | 117 |
| 2,4,6-Tribromophenol | 83 | 11 | 158 |
| Terphenyl-d14 | 113 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-24 |
| Date Analyzed: | 11/14/22 | Data File: | 111413.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 89 | 10 | 198 |
| 2-Fluorobiphenyl | 87 | 45 | 117 |
| 2,4,6-Tribromophenol | 99 | 11 | 158 |
| Terphenyl-d14 | 99 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S1-5-DUP | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-25 |
| Date Analyzed: | 11/14/22 | Data File: | 111415.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 56 | 10 | 198 |
| 2-Fluorobiphenyl | 79 | 45 | 117 |
| 2,4,6-Tribromophenol | 91 | 11 | 158 |
| Terphenyl-d14 | 96 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-26 |
| Date Analyzed: | 11/14/22 | Data File: | 111409.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 60 | 10 | 198 |
| 2-Fluorobiphenyl | 80 | 45 | 117 |
| 2,4,6-Tribromophenol | 90 | 11 | 158 |
| Terphenyl-d14 | 99 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-27 |
| Date Analyzed: | 11/14/22 | Data File: | 111410.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 30 | 10 | 198 |
| 2-Fluorobiphenyl | 66 | 45 | 117 |
| 2,4,6-Tribromophenol | 77 | 11 | 158 |
| Terphenyl-d14 | 92 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-28 |
| Date Analyzed: | 11/14/22 | Data File: | 111411.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 27 | 10 | 198 |
| 2-Fluorobiphenyl | 64 | 45 | 117 |
| 2,4,6-Tribromophenol | 85 | 11 | 158 |
| Terphenyl-d14 | 95 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW2D-S8-40 | Client: | Haley & Aldrich, Inc |
| Date Received: | 10/28/22 | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 210464-32 |
| Date Analyzed: | 11/14/22 | Data File: | 111412.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 27 | 10 | 198 |
| 2-Fluorobiphenyl | 63 | 45 | 117 |
| 2,4,6-Tribromophenol | 81 | 11 | 158 |
| Terphenyl-d14 | 94 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 210464 |
| Date Extracted: | 11/10/22 | Lab ID: | 02-2741 mb |
| Date Analyzed: | 11/11/22 | Data File: | 111110.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 55 | 10 | 198 |
| 2-Fluorobiphenyl | 76 | 45 | 117 |
| 2,4,6-Tribromophenol | 82 | 11 | 158 |
| Terphenyl-d14 | 119 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Gasoline | mg/kg (ppm) | 20 | 100 | 95 | 70-130 | 5 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 210464-03 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | (Wet wt) Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 95 | 95 | 70-130 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 93 | 70-130 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 210464-01 x5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | <5 | 104 | 88 | 75-125 | 17 |
| Barium | mg/kg (ppm) | 50 | 67.2 | 142 b | 101 | 75-125 | 34 b |
| Cadmium | mg/kg (ppm) | 10 | <5 | 100 | 91 | 75-125 | 9 |
| Chromium | mg/kg (ppm) | 50 | 13.8 | 95 | 88 | 75-125 | 8 |
| Copper | mg/kg (ppm) | 50 | 42.8 | 97 | 89 | 75-125 | 9 |
| Lead | mg/kg (ppm) | 50 | <5 | 99 | 92 | 75-125 | 7 |
| Nickel | mg/kg (ppm) | 25 | 13.3 | 96 | 87 | 75-125 | 10 |
| Selenium | mg/kg (ppm) | 5 | <5 | 65 vo | 42 vo | 75-125 | 43 vo |
| Silver | mg/kg (ppm) | 10 | <5 | 104 | 96 | 75-125 | 8 |
| Zinc | mg/kg (ppm) | 50 | 31.0 | 94 | 94 | 75-125 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 88 | 80-120 |
| Barium | mg/kg (ppm) | 50 | 96 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 92 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 96 | 80-120 |
| Copper | mg/kg (ppm) | 50 | 98 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 98 | 80-120 |
| Nickel | mg/kg (ppm) | 25 | 96 | 80-120 |
| Selenium | mg/kg (ppm) | 5 | 84 | 80-120 |
| Silver | mg/kg (ppm) | 10 | 102 | 80-120 |
| Zinc | mg/kg (ppm) | 50 | 90 | 80-120 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 210464-01x10 Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 0.125 | 0.05 | 119 | 111 | 71-125 | 8 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 0.125 | 113 | 68-125 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 211155-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | <0.5 | 11 | 9 vo | 10-142 | 20 |
| Chloromethane | mg/kg (ppm) | 1 | <0.5 | 40 | 37 | 10-126 | 8 |
| Vinyl chloride | mg/kg (ppm) | 1 | <0.05 | 38 | 35 | 10-138 | 8 |
| Bromomethane | mg/kg (ppm) | 1 | <0.5 | 87 | 102 | 10-163 | 16 |
| Chloroethane | mg/kg (ppm) | 1 | <0.5 | 61 | 58 | 10-176 | 5 |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | <0.5 | 41 | 37 | 10-176 | 10 |
| Acetone | mg/kg (ppm) | 5 | <5 | 160 | 148 | 10-163 | 8 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 49 | 46 | 10-160 | 6 |
| Hexane | mg/kg (ppm) | 1 | <0.25 | 23 | 20 | 10-137 | 14 |
| Methylene chloride | mg/kg (ppm) | 1 | <0.5 | 72 | 78 | 10-156 | 8 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | <0.05 | 83 | 81 | 21-145 | 2 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 62 | 59 | 14-137 | 5 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | <0.05 | 67 | 65 | 19-140 | 3 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 81 | 78 | 10-158 | 4 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | <0.05 | 74 | 71 | 25-135 | 4 |
| Chloroform | mg/kg (ppm) | 1 | <0.05 | 77 | 74 | 21-145 | 4 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | <1 | 81 | 81 | 19-147 | 0 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | <0.05 | 77 | 77 | 12-160 | 0 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | <0.05 | 71 | 67 | 10-156 | 6 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 64 | 61 | 17-140 | 5 |
| Carbon tetrachloride | mg/kg (ppm) | 1 | <0.05 | 70 | 65 | 9-164 | 7 |
| Benzene | mg/kg (ppm) | 1 | <0.03 | 70 | 67 | 29-129 | 4 |
| Trichloroethene | mg/kg (ppm) | 1 | <0.02 | 72 | 68 | 21-139 | 6 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 74 | 72 | 30-135 | 3 |
| Bromodichloromethane | mg/kg (ppm) | 1 | <0.05 | 77 | 76 | 23-155 | 1 |
| Dibromomethane | mg/kg (ppm) | 1 | <0.05 | 81 | 78 | 23-145 | 4 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | <1 | 84 | 83 | 24-155 | 1 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 76 | 74 | 28-144 | 3 |
| Toluene | mg/kg (ppm) | 1 | <0.05 | 72 | 70 | 35-130 | 3 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | <0.05 | 72 | 72 | 26-149 | 0 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | <0.05 | 74 | 76 | 10-205 | 3 |
| 2-Hexanone | mg/kg (ppm) | 5 | <0.5 | 72 | 72 | 15-166 | 0 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | <0.05 | 75 | 74 | 31-137 | 1 |
| Tetrachloroethene | mg/kg (ppm) | 1 | <0.025 | 75 | 73 | 20-133 | 3 |
| Dibromochloromethane | mg/kg (ppm) | 1 | <0.05 | 85 | 86 | 28-150 | 1 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | <0.05 | 76 | 77 | 28-142 | 1 |
| Chlorobenzene | mg/kg (ppm) | 1 | <0.05 | 78 | 75 | 32-129 | 4 |
| Ethylbenzene | mg/kg (ppm) | 1 | <0.05 | 72 | 70 | 32-137 | 3 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | <0.05 | 84 | 81 | 31-143 | 4 |
| m,p-Xylene | mg/kg (ppm) | 2 | <0.1 | 75 | 71 | 34-136 | 5 |
| o-Xylene | mg/kg (ppm) | 1 | <0.05 | 76 | 74 | 33-134 | 3 |
| Styrene | mg/kg (ppm) | 1 | <0.05 | 75 | 73 | 35-137 | 3 |
| Isopropylbenzene | mg/kg (ppm) | 1 | <0.05 | 76 | 73 | 31-142 | 4 |
| Bromoform | mg/kg (ppm) | 1 | <0.05 | 91 | 93 | 21-156 | 2 |
| n-Propylbenzene | mg/kg (ppm) | 1 | <0.05 | 69 | 64 | 23-146 | 8 |
| Bromobenzene | mg/kg (ppm) | 1 | <0.05 | 78 | 74 | 34-130 | 5 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | <0.05 | 71 | 66 | 18-149 | 7 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | <0.05 | 75 | 74 | 28-140 | 1 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | <0.05 | 73 | 72 | 25-144 | 1 |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | <0.05 | 71 | 67 | 31-134 | 6 |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | <0.05 | 70 | 66 | 31-136 | 6 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | <0.05 | 75 | 70 | 30-137 | 7 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | <0.05 | 70 | 65 | 10-182 | 7 |
| sec-Butylbenzene | mg/kg (ppm) | 1 | <0.05 | 70 | 66 | 23-145 | 6 |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | <0.05 | 72 | 66 | 21-149 | 9 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 76 | 72 | 30-131 | 5 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 76 | 72 | 29-129 | 5 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | <0.05 | 77 | 73 | 31-132 | 5 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | <0.5 | 71 | 74 | 11-161 | 4 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | <0.25 | 70 | 63 | 22-142 | 11 |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | <0.25 | 68 | 65 | 10-142 | 5 |
| Naphthalene | mg/kg (ppm) | 1 | <0.05 | 72 | 68 | 14-157 | 6 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | <0.25 | 71 | 65 | 20-144 | 9 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1 | 55 | 10-146 |
| Chloromethane | mg/kg (ppm) | 1 | 74 | 27-133 |
| Vinyl chloride | mg/kg (ppm) | 1 | 86 | 22-139 |
| Bromomethane | mg/kg (ppm) | 1 | 79 | 38-114 |
| Chloroethane | mg/kg (ppm) | 1 | 96 | 9-163 |
| Trichlorofluoromethane | mg/kg (ppm) | 1 | 108 | 10-196 |
| Acetone | mg/kg (ppm) | 5 | 190 vo | 52-141 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1 | 93 | 47-128 |
| Hexane | mg/kg (ppm) | 1 | 95 | 43-142 |
| Methylene chloride | mg/kg (ppm) | 1 | 100 | 10-184 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1 | 102 | 60-123 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1 | 99 | 67-129 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1 | 97 | 68-115 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1 | 122 | 52-170 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1 | 101 | 72-127 |
| Chloroform | mg/kg (ppm) | 1 | 104 | 66-120 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5 | 103 | 30-197 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1 | 101 | 56-135 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1 | 108 | 62-131 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1 | 101 | 69-128 |
| Carbon tetrachloride | mg/kg (ppm) | 1 | 111 | 60-139 |
| Benzene | mg/kg (ppm) | 1 | 99 | 71-118 |
| Trichloroethene | mg/kg (ppm) | 1 | 102 | 63-121 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1 | 98 | 72-127 |
| Bromodichloromethane | mg/kg (ppm) | 1 | 102 | 57-126 |
| Dibromomethane | mg/kg (ppm) | 1 | 108 | 62-123 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5 | 105 | 45-145 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1 | 101 | 67-122 |
| Toluene | mg/kg (ppm) | 1 | 99 | 66-126 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1 | 94 | 72-132 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1 | 98 | 64-115 |
| 2-Hexanone | mg/kg (ppm) | 5 | 88 | 33-152 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1 | 96 | 72-130 |
| Tetrachloroethene | mg/kg (ppm) | 1 | 112 | 72-114 |
| Dibromochloromethane | mg/kg (ppm) | 1 | 109 | 55-121 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1 | 102 | 74-132 |
| Chlorobenzene | mg/kg (ppm) | 1 | 103 | 76-111 |
| Ethylbenzene | mg/kg (ppm) | 1 | 99 | 64-123 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1 | 109 | 64-121 |
| m,p-Xylene | mg/kg (ppm) | 2 | 102 | 78-122 |
| o-Xylene | mg/kg (ppm) | 1 | 102 | 77-124 |
| Styrene | mg/kg (ppm) | 1 | 100 | 74-126 |
| Isopropylbenzene | mg/kg (ppm) | 1 | 103 | 76-127 |
| Bromoform | mg/kg (ppm) | 1 | 122 | 56-132 |
| n-Propylbenzene | mg/kg (ppm) | 1 | 94 | 74-124 |
| Bromobenzene | mg/kg (ppm) | 1 | 105 | 72-122 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1 | 97 | 76-126 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1 | 94 | 56-143 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1 | 93 | 61-137 |
| 2-Chlorotoluene | mg/kg (ppm) | 1 | 94 | 74-121 |
| 4-Chlorotoluene | mg/kg (ppm) | 1 | 93 | 75-122 |
| tert-Butylbenzene | mg/kg (ppm) | 1 | 101 | 73-130 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1 | 96 | 76-125 |
| sec-Butylbenzene | mg/kg (ppm) | 1 | 98 | 71-130 |
| p-Isopropyltoluene | mg/kg (ppm) | 1 | 99 | 70-132 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1 | 104 | 75-121 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1 | 103 | 74-117 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1 | 103 | 76-121 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1 | 95 | 58-138 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1 | 106 | 64-135 |
| Hexachlorobutadiene | mg/kg (ppm) | 1 | 109 | 50-153 |
| Naphthalene | mg/kg (ppm) | 1 | 101 | 63-140 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1 | 109 | 63-138 |

Date of Report: 11/30/22
Date Received: 10/28/22
Project: Kosmos, F&BI 210464

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 210464-15 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | <0.002 | 68 | 51 | 28-125 | 29 vo |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 80 | 68 | 10-192 | 16 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 78 | 68 | 10-163 | 14 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | <0.002 | 89 | 81 | 45-128 | 9 |
| Acenaphthene | mg/kg (ppm) | 0.83 | <0.002 | 87 | 79 | 36-125 | 10 |
| Fluorene | mg/kg (ppm) | 0.83 | <0.002 | 95 | 87 | 48-121 | 9 |
| Phenanthrene | mg/kg (ppm) | 0.83 | <0.002 | 95 | 89 | 50-150 | 7 |
| Anthracene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 88 | 50-150 | 6 |
| Fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 102 | 97 | 50-150 | 5 |
| Pyrene | mg/kg (ppm) | 0.83 | <0.002 | 107 | 100 | 40-134 | 7 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 112 | 105 | 50-150 | 6 |
| Chrysene | mg/kg (ppm) | 0.83 | <0.002 | 103 | 96 | 50-150 | 7 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 106 | 100 | 50-150 | 6 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 113 | 107 | 50-150 | 5 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 109 | 103 | 50-150 | 6 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 109 | 101 | 41-134 | 8 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 109 | 101 | 44-130 | 8 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | <0.002 | 104 | 97 | 33-131 | 7 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 78 | 58-108 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 95 | 67-109 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 93 | 66-107 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 105 | 70-130 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 101 | 66-112 |
| Fluorene | mg/kg (ppm) | 0.83 | 111 | 67-117 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 105 | 70-130 |
| Anthracene | mg/kg (ppm) | 0.83 | 105 | 70-130 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 113 | 70-130 |
| Pyrene | mg/kg (ppm) | 0.83 | 115 | 70-130 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 120 | 70-130 |
| Chrysene | mg/kg (ppm) | 0.83 | 110 | 70-130 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 117 | 68-120 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 120 | 69-125 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 116 | 70-130 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 115 | 67-129 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 115 | 67-128 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 109 | 64-127 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

210464

# SAMPLE CHAIN OF CUSTODY 10/28/22 VSBI/~~GBS~~ C05

Report To Angie Goodwin
Company Haley & Aldrich
Address 3131 Elliot Ave #600
City, State, ZIP Seattle, WA.
Phone _____ Email Agoodwin@haleyaldrich.com

SAMPLERS (*signature*)

PROJECT NAME: KOSMOS
PO #

REMARKS
Project specific RLs? - Yes / No

INVOICE TO

Page # 1 of 4

TURNAROUND TIME
☒ Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW30-S1-5 | 01 A-F | 10/27/22 | 0910 | S | 6 | X | X | | | X | X | | ⊗ | X | | | X per AG |
| MW30-S2-10 | 02 | | 0920 | | | X | X | | | X | X | | ⊗ | X | | | 11/9/22 ME |
| MW30-S3-15 | 03 | | 0930 | | | X | X | | | X | X | | X | | | | |
| MW30-S4-20 | 04 | | 0945 | | | X | X | | | X | X | | ⊗ | | | | |
| MW30-S5-25 | 05 | | 0955 | | | X | X | | | X | X | | X | X | | | |
| MW30-S6-30 | 06 | | 1005 | | | | | | | | | | | | | | |
| MW30-S7-35 | 07 | | 1015 | | | | | | | | | | | | | | |
| MW30-S8-40 | 08 | | 1020 | | | | | | | | | | | | | | |
| MW30-S9-45 | 09 | | 1035 | | | | | | | | | | | | | | |
| MW30-S10-50 | 10 | | 1040 | | | | | | | | | | | | | | |

Samples received at 2 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Zach Stephens | Haley & Aldrich | 10/28/22 | 1910 |
| Received by: | BISRAT TADESSE | FBI | 10/28/22 | 1810 |
| Relinquished by: | | | | |
| Received by: | | | | |

Samples ~~received~~ at 2 °C

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

2104464

# SAMPLE CHAIN OF CUSTODY 10/28/22 VS-B1/CIS C05

Page # 2 of 4

Report To Angie Goodwin

Company Haley & Aldrich

Address

City, State, ZIP

Phone Email Agoodwin@haleyaldrich.com

SAMPLERS (*signature*)

PROJECT NAME: KOSMOS

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

**TURNAROUND TIME**
- ☒ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW3D-S11-55 | 11A-R | 10/27/22 | 1105 | S | 6 | X | X | | | X | | | X | | | | |
| MW3D-S12-60 | 12 | | 1110 | | | | | | | | | | | | | | |
| MW4D-S1-3 | 13 | | 1515 | | | X | X | | | X | | | X | X | | | |
| MW4D-S2-10 | 14 | | 1535 | | | X | X | | | X | X | | X | | | | |
| MW4D-S3-15 | 15 | | 1540 | | | X | X | | | X | X | | X | | | | |
| MW4D-S4-20 | 16 | | 1545 | | | | | | | | | | | | | | |
| MW4D-S5-25 | 17 | | 1600 | | | X | X | | | X | | | X | X | | | |
| MW4D-S6-30 | 18 | | 1605 | | | | | | | | | | | | | | |
| MW4D-S7-35 | 19 | | 1620 | | | | | | | | | | | | | | |
| MW4D-S8-40 | 20 | | 1625 | | | X | X | | | X | | | X | | | | |

Samples received at 2 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Zach Stephens | Haley & Aldrich | 10/28 | 1810 |
| Received by: | BISRAT TADESSE | FBI | 10/28 | 1810 |
| Relinquished by: | | | | |
| Received by: | | | | |

Samples received at 2 °C

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

210464

# SAMPLE CHAIN OF CUSTODY

10/29/22

VS-B1/GI3 COC 4

Page # 3 of 4

Report To Angie Goodwin

Company Haley & Aldrich

Address

City, State, ZIP

Phone Email Agoodwin@haleyaldrich.com

SAMPLERS (signature)

PROJECT NAME: KOSMOS

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW4D-S9-45 | 21 A-F | 10/28/22 | 0925 | S | 6 | | | | | | | | | | | | |
| MW4D-S10-50 | 22 | | 0935 | | | | | | | | | | | | | | |
| MW4D-S11-55 | 23 | | 1000 | | | | | | | | | | | | | | |
| MW2D-S1-5 | 24 | | 1140 | | | X | X | | | X | X | | X | X | | | |
| MW2D-S15-DUP | 25 | | 1140 | | | X | X | | | X | X | | X | X | | | |
| MW2D-S2-10 | 26 | | 1145 | | | X | X | | | X | X | | X | X | | | |
| MW2D-S3-15 | 27 | | ~~1155~~ 1205 | | | X | X | | | X | X | | X | X | | | |
| MW2D-S4-20 | 28 | | ~~1210~~ 1205 | | | X | X | | | X | X | | X | X | | | |
| MW2D-S5-25 | 29 | | 1240 | | | | | | | | | | | | | | |
| MW2D-S6-30 | 30 | | 1245 | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Zach Stefanow | Haley/Aldrich | 10/28/22 | 1810 |
| Received by: | BISRAT TADESSE | FBI | 10/28/22 | 1810 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 2 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

210464

# SAMPLE CHAIN OF CUSTODY 10/28/22 VSBI / CDS COS

Page # 2 of 4

Report To Angie Groeschen

Company HWA

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: KOSMOS

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

**TURNAROUND TIME**
- ☐ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ANALYSES REQUESTED | | | | | | | | | | | |
| MW2D-57-35 | 31 A-F | 10/24/22 | 1310 | S | 6 | | | | | | | | | | | | |
| MW2D-58-40 | 32 | | 1320 | | | X | X | | | X | X | | X | | | | |
| MW2D-59-45 | 33 | | 1330 | | | | | | | | | | | | | | |
| MW2D-510-50 | 34 | | 1335 | | | | | | | | | | | | | | |
| MW2D-511-55 | 35 | | 1350 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | |

Samples received at 2 °C

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Zach Stephens | HWA | 10/28/22 | 1810 |
| Received by: | BISRAT TADESSE | FBI | 10/28/22 | 1810 |
| Relinquished by: | | | | |
| Received by: | | | | |

Samples received at 2 °C

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 21, 2022

Michael Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029

Re: Analytical Data for Project 210464
Laboratory Reference No. 2211-172

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on November 10, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures



This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 21, 2022
Samples Submitted: November 10, 2022
Laboratory Reference: 2211-172
Project: 210464

**Case Narrative**

Samples were collected on October 27 and 28, 2022 and received by the laboratory on November 10, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: November 21, 2022
Samples Submitted: November 10, 2022
Laboratory Reference: 2211-172
Project: 210464

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW3D-S1-5** | | | | | |
| Laboratory ID: | 11-172-01 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C6-C8 | **9.2** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C8-C10 | **15** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aliphatic: | **24** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C8-C10 | **16** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C10-C12 | **26** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C12-C13 | **140** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aromatic: | **180** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Methyl t-butyl ether | **ND** | 0.25 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Benzene | **0.067** | 0.051 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Toluene | **ND** | 0.25 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Ethylbenzene | **ND** | 0.25 | EPA 8021B | 11-16-22 | 11-16-22 | |
| m,p-Xylene | **ND** | 0.25 | EPA 8021B | 11-16-22 | 11-16-22 | |
| o-Xylene | **ND** | 0.25 | EPA 8021B | 11-16-22 | 11-16-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *126* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 21, 2022
Samples Submitted: November 10, 2022
Laboratory Reference: 2211-172
Project: 210464

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW3D-S2-10** | | | | | |
| Laboratory ID: | 11-172-02 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C6-C8 | **11** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C8-C10 | **19** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aliphatic: | **30** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C8-C10 | **26** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C10-C12 | **74** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C12-C13 | **490** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aromatic: | **590** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-17-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 11-16-22 | 11-17-22 | |
| Toluene | **0.28** | 0.050 | EPA 8021B | 11-16-22 | 11-17-22 | |
| Ethylbenzene | **0.11** | 0.050 | EPA 8021B | 11-16-22 | 11-17-22 | |
| m,p-Xylene | **0.18** | 0.050 | EPA 8021B | 11-16-22 | 11-17-22 | |
| o-Xylene | **0.51** | 0.050 | EPA 8021B | 11-16-22 | 11-17-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *101* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 21, 2022
Samples Submitted: November 10, 2022
Laboratory Reference: 2211-172
Project: 210464

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW3D-S4-20** | | | | | |
| Laboratory ID: | 11-172-03 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-16-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-16-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-16-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *102* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 21, 2022
Samples Submitted: November 10, 2022
Laboratory Reference: 2211-172
Project: 210464

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW2D-S1-5** | | | | | |
| Laboratory ID: | 11-172-04 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Methyl t-butyl ether | **ND** | 0.063 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Toluene | **ND** | 0.063 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Ethylbenzene | **ND** | 0.063 | EPA 8021B | 11-16-22 | 11-16-22 | |
| m,p-Xylene | **ND** | 0.063 | EPA 8021B | 11-16-22 | 11-16-22 | |
| o-Xylene | **ND** | 0.063 | EPA 8021B | 11-16-22 | 11-16-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *127* | *69-130* | | | | |



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Date of Report: November 21, 2022
Samples Submitted: November 10, 2022
Laboratory Reference: 2211-172
Project: 210464

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW2D-S1-5-DUP** | | | | | |
| Laboratory ID: | 11-172-05 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Methyl t-butyl ether | **ND** | 0.060 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Toluene | **ND** | 0.060 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Ethylbenzene | **ND** | 0.060 | EPA 8021B | 11-16-22 | 11-16-22 | |
| m,p-Xylene | **ND** | 0.060 | EPA 8021B | 11-16-22 | 11-16-22 | |
| o-Xylene | **ND** | 0.060 | EPA 8021B | 11-16-22 | 11-16-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *132* | *69-130* | | | | |



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Date of Report: November 21, 2022
Samples Submitted: November 10, 2022
Laboratory Reference: 2211-172
Project: 210464

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW2D-S2-10** | | | | | |
| Laboratory ID: | 11-172-06 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Methyl t-butyl ether | **ND** | 0.053 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Toluene | **ND** | 0.053 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Ethylbenzene | **ND** | 0.053 | EPA 8021B | 11-16-22 | 11-16-22 | |
| m,p-Xylene | **ND** | 0.053 | EPA 8021B | 11-16-22 | 11-16-22 | |
| o-Xylene | **ND** | 0.053 | EPA 8021B | 11-16-22 | 11-16-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *110* | *69-130* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 21, 2022
Samples Submitted: November 10, 2022
Laboratory Reference: 2211-172
Project: 210464

**VOLATILE PETROLEUM HYDROCARBONS**
**QUALITY CONTROL**

Matrix: Soil
Units: mg/Kg (ppm)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB1116S1 | | | | | |
| Aliphatic C5-C6 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C6-C8 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aliphatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C8-C10 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C10-C12 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Aromatic C12-C13 | **ND** | 5.0 | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 11-16-22 | 11-16-22 | |
| Methyl t-butyl ether | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Benzene | **ND** | 0.020 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Toluene | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-16-22 | |
| Ethylbenzene | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-16-22 | |
| m,p-Xylene | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-16-22 | |
| o-Xylene | **ND** | 0.050 | EPA 8021B | 11-16-22 | 11-16-22 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *93* | *69-130* | | | | |

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPIKE BLANKS** | | | | | | | | | | | |
| Laboratory ID: | SB1116S1 | | | | | | | | | | |
| | SB | SBD | SB | SBD | | SB | SBD | | | | |
| Benzene | **1.01** | **1.01** | 1.00 | 1.00 | | **101** | **101** | 68-112 | 0 | 10 | |
| Toluene | **1.04** | **1.03** | 1.00 | 1.00 | | **104** | **103** | 70-114 | 1 | 10 | |
| Ethylbenzene | **0.995** | **0.989** | 1.00 | 1.00 | | **100** | **99** | 70-115 | 1 | 10 | |
| m,p-Xylene | **0.983** | **0.989** | 1.00 | 1.00 | | **98** | **99** | 69-117 | 1 | 11 | |
| o-Xylene | **0.992** | **0.997** | 1.00 | 1.00 | | **99** | **100** | 71-115 | 1 | 11 | |
| *Surrogate:* | | | | | | | | | | | |
| *Fluorobenzene* | | | | | | *96* | *96* | *69-130* | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

11-172

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Page # 1 of 1

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Onsite
PROJECT NAME/NO. 210464
PO # D-4
REMARKS * Hold Times *

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW3D-S1-5 | 1 | 10/27/12 | 0910 | Soil | 1 | | | X | | | | | | | | |
| MW3D-S2-10 | 2 | ↓ | 0920 | ↓ | ↓ | | | X | | | | | | | | |
| MW3D-S4-20 | 3 | ↓ | 0945 | ↓ | ↓ | | | X | | | | | | | | |
| MW2D-S1-5 | 4 | 10/28/12 | 1140 | ↓ | ↓ | | | X | | | | | | | | |
| MW2D-S1-5-DUP | 5 | ↓ | 1140 | ↓ | ↓ | | | X | | | | | | | | |
| MW2D-S2-10 | 6 | ↓ | 1145 | ↓ | ↓ | | | X | | | | | | | | |

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 11/10/12 | 0806 |
| Received by: | | M. VOLN | OSE | 11/10/12 | 1100 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 210464**
**Work Order Number: 2211250**

November 28, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 6 sample(s) on 11/10/2022 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***
***Sample Moisture (Percent Moisture)***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *11/28/2022*

**CLIENT:** Friedman & Bruya
**Project:** 210464
**Work Order:** 2211250

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2211250-001 | MW3D-S1-5 | 10/27/2022 9:10 AM | 11/10/2022 9:59 AM |
| 2211250-002 | MW3D-S2-10 | 10/27/2022 9:20 AM | 11/10/2022 9:59 AM |
| 2211250-003 | MW3D-S4-20 | 10/27/2022 9:45 AM | 11/10/2022 9:59 AM |
| 2211250-004 | MW2D-S1-5 | 10/28/2022 11:40 AM | 11/10/2022 9:59 AM |
| 2211250-005 | MW2D-S1-5-DUP | 10/28/2022 11:40 AM | 11/10/2022 9:59 AM |
| 2211250-006 | MW2D-S2-10 | 10/28/2022 11:45 AM | 11/10/2022 9:59 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2211250**
Date: **11/28/2022**

**CLIENT:** Friedman & Bruya
**Project:** 210464

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2211250**
Date Reported: **11/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/27/2022 9:10:00 AM
**Project:** 210464
**Lab ID:** 2211250-001
**Matrix:** Soil
**Client Sample ID:** **MW3D-S1-5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38396 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 30.0 | | mg/Kg-dry | 1 | 11/28/2022 10:23:59 AM |
| Aliphatic Hydrocarbon (C10-C12) | 37.4 | 15.0 | | mg/Kg-dry | 1 | 11/28/2022 10:23:59 AM |
| Aliphatic Hydrocarbon (C12-C16) | 157 | 15.0 | | mg/Kg-dry | 1 | 11/28/2022 10:23:59 AM |
| Aliphatic Hydrocarbon (C16-C21) | 106 | 15.0 | | mg/Kg-dry | 1 | 11/28/2022 10:23:59 AM |
| Aliphatic Hydrocarbon (C21-C34) | 48.1 | 15.0 | | mg/Kg-dry | 1 | 11/28/2022 10:23:59 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 30.0 | | mg/Kg-dry | 1 | 11/23/2022 9:55:42 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 15.0 | | mg/Kg-dry | 1 | 11/23/2022 9:55:42 AM |
| Aromatic Hydrocarbon (C12-C16) | 55.3 | 15.0 | | mg/Kg-dry | 1 | 11/23/2022 9:55:42 AM |
| Aromatic Hydrocarbon (C16-C21) | 136 | 15.0 | Q | mg/Kg-dry | 1 | 11/23/2022 9:55:42 AM |
| Aromatic Hydrocarbon (C21-C34) | 104 | 15.0 | | mg/Kg-dry | 1 | 11/23/2022 9:55:42 AM |
| Surr: 1-Chlorooctadecane | 78.1 | 50 - 150 | | %Rec | 1 | 11/28/2022 10:23:59 AM |
| Surr: o-Terphenyl | 65.3 | 50 - 150 | | %Rec | 1 | 11/23/2022 9:55:42 AM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria (77% recovery, nominal range 80-120%). Result may be marginally low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79736 | | Analyst: ALB |
| Percent Moisture | 34.0 | 0.500 | | wt% | 1 | 11/10/2022 1:46:48 PM |

# Analytical Report

Work Order: **2211250**
Date Reported: **11/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/27/2022 9:20:00 AM
**Project:** 210464
**Lab ID:** 2211250-002
**Matrix:** Soil
**Client Sample ID:** **MW3D-S2-10**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38396 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 25.6 | | mg/Kg-dry | 1 | 11/28/2022 12:19:33 PM |
| Aliphatic Hydrocarbon (C10-C12) | 43.6 | 12.8 | | mg/Kg-dry | 1 | 11/28/2022 12:19:33 PM |
| Aliphatic Hydrocarbon (C12-C16) | 149 | 12.8 | | mg/Kg-dry | 1 | 11/28/2022 12:19:33 PM |
| Aliphatic Hydrocarbon (C16-C21) | 166 | 12.8 | | mg/Kg-dry | 1 | 11/28/2022 12:19:33 PM |
| Aliphatic Hydrocarbon (C21-C34) | 25.9 | 12.8 | | mg/Kg-dry | 1 | 11/28/2022 12:19:33 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 25.6 | | mg/Kg-dry | 1 | 11/23/2022 10:18:29 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 12.8 | | mg/Kg-dry | 1 | 11/23/2022 10:18:29 AM |
| Aromatic Hydrocarbon (C12-C16) | 56.7 | 12.8 | | mg/Kg-dry | 1 | 11/23/2022 10:18:29 AM |
| Aromatic Hydrocarbon (C16-C21) | 126 | 12.8 | Q | mg/Kg-dry | 1 | 11/23/2022 10:18:29 AM |
| Aromatic Hydrocarbon (C21-C34) | 71.9 | 12.8 | | mg/Kg-dry | 1 | 11/23/2022 10:18:29 AM |
| Surr: 1-Chlorooctadecane | 64.1 | 50 - 150 | | %Rec | 1 | 11/28/2022 12:19:33 PM |
| Surr: o-Terphenyl | 56.8 | 50 - 150 | | %Rec | 1 | 11/23/2022 10:18:29 AM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria (77% recovery, nominal range 80-120%). Result may be marginally low-biased.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79736 | | Analyst: ALB |
| Percent Moisture | 15.4 | 0.500 | | wt% | 1 | 11/10/2022 1:46:48 PM |

# Analytical Report

Work Order: **2211250**
Date Reported: **11/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/27/2022 9:45:00 AM
**Project:** 210464
**Lab ID:** 2211250-003
**Matrix:** Soil
**Client Sample ID:** **MW3D-S4-20**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38396 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 21.7 | | mg/Kg-dry | 1 | 11/28/2022 10:47:06 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 10.9 | | mg/Kg-dry | 1 | 11/28/2022 10:47:06 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.9 | | mg/Kg-dry | 1 | 11/28/2022 10:47:06 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.9 | | mg/Kg-dry | 1 | 11/28/2022 10:47:06 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.9 | | mg/Kg-dry | 1 | 11/28/2022 10:47:06 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 21.7 | | mg/Kg-dry | 1 | 11/23/2022 10:41:26 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.9 | | mg/Kg-dry | 1 | 11/23/2022 10:41:26 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.9 | | mg/Kg-dry | 1 | 11/23/2022 10:41:26 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 10.9 | Q | mg/Kg-dry | 1 | 11/23/2022 10:41:26 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.9 | | mg/Kg-dry | 1 | 11/23/2022 10:41:26 AM |
| Surr: 1-Chlorooctadecane | 79.9 | 50 - 150 | | %Rec | 1 | 11/28/2022 10:47:06 AM |
| Surr: o-Terphenyl | 88.1 | 50 - 150 | | %Rec | 1 | 11/23/2022 10:41:26 AM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria (77% recovery, nominal range 80-120%). Result may be marginally low-biased.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79736 | | Analyst: ALB |
| Percent Moisture | 9.56 | 0.500 | | wt% | 1 | 11/10/2022 1:46:48 PM |

# Analytical Report

Work Order: **2211250**
Date Reported: **11/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/28/2022 11:40:00 AM
**Project:** 210464
**Lab ID:** 2211250-004
**Matrix:** Soil
**Client Sample ID:** **MW2D-S1-5**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38396 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 30.9 | | mg/Kg-dry | 1 | 11/28/2022 11:10:15 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 15.5 | | mg/Kg-dry | 1 | 11/28/2022 11:10:15 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 15.5 | | mg/Kg-dry | 1 | 11/28/2022 11:10:15 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 15.5 | | mg/Kg-dry | 1 | 11/28/2022 11:10:15 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 15.5 | | mg/Kg-dry | 1 | 11/28/2022 11:10:15 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 30.9 | | mg/Kg-dry | 1 | 11/23/2022 11:04:13 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 15.5 | | mg/Kg-dry | 1 | 11/23/2022 11:04:13 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 15.5 | | mg/Kg-dry | 1 | 11/23/2022 11:04:13 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 15.5 | Q | mg/Kg-dry | 1 | 11/23/2022 11:04:13 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 15.5 | | mg/Kg-dry | 1 | 11/23/2022 11:04:13 AM |
| Surr: 1-Chlorooctadecane | 63.7 | 50 - 150 | | %Rec | 1 | 11/28/2022 11:10:15 AM |
| Surr: o-Terphenyl | 72.5 | 50 - 150 | | %Rec | 1 | 11/23/2022 11:04:13 AM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria (77% recovery, nominal range 80-120%). Result may be marginally low-biased.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79736 | | Analyst: ALB |
| Percent Moisture | 36.2 | 0.500 | | wt% | 1 | 11/10/2022 1:46:48 PM |

# Analytical Report

Work Order: **2211250**
Date Reported: **11/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/28/2022 11:40:00 AM
**Project:** 210464
**Lab ID:** 2211250-005
**Matrix:** Soil
**Client Sample ID:** **MW2D-S1-5-DUP**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38396 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 31.0 | | mg/Kg-dry | 1 | 11/28/2022 11:33:22 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 15.5 | | mg/Kg-dry | 1 | 11/28/2022 11:33:22 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 15.5 | | mg/Kg-dry | 1 | 11/28/2022 11:33:22 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 15.5 | | mg/Kg-dry | 1 | 11/28/2022 11:33:22 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 15.5 | | mg/Kg-dry | 1 | 11/28/2022 11:33:22 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 31.0 | | mg/Kg-dry | 1 | 11/23/2022 11:27:01 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 15.5 | | mg/Kg-dry | 1 | 11/23/2022 11:27:01 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 15.5 | | mg/Kg-dry | 1 | 11/23/2022 11:27:01 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 15.5 | Q | mg/Kg-dry | 1 | 11/23/2022 11:27:01 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 15.5 | | mg/Kg-dry | 1 | 11/23/2022 11:27:01 AM |
| Surr: 1-Chlorooctadecane | 69.2 | 50 - 150 | | %Rec | 1 | 11/28/2022 11:33:22 AM |
| Surr: o-Terphenyl | 66.9 | 50 - 150 | | %Rec | 1 | 11/23/2022 11:27:01 AM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria (77% recovery, nominal range 80-120%). Result may be marginally low-biased.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79736 | | Analyst: ALB |
| Percent Moisture | 36.8 | 0.500 | | wt% | 1 | 11/10/2022 1:46:48 PM |

# Analytical Report

Work Order: **2211250**
Date Reported: **11/28/2022**

**Client:** Friedman & Bruya
**Collection Date:** 10/28/2022 11:45:00 AM
**Project:** 210464
**Lab ID:** 2211250-006
**Matrix:** Soil
**Client Sample ID:** **MW2D-S2-10**

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 38396 | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 27.7 | | mg/Kg-dry | 1 | 11/28/2022 11:56:27 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 13.8 | | mg/Kg-dry | 1 | 11/28/2022 11:56:27 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 13.8 | | mg/Kg-dry | 1 | 11/28/2022 11:56:27 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 13.8 | | mg/Kg-dry | 1 | 11/28/2022 11:56:27 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 13.8 | | mg/Kg-dry | 1 | 11/28/2022 11:56:27 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 27.7 | | mg/Kg-dry | 1 | 11/23/2022 12:05:41 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 13.8 | | mg/Kg-dry | 1 | 11/23/2022 12:05:41 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 13.8 | | mg/Kg-dry | 1 | 11/23/2022 12:05:41 PM |
| Aromatic Hydrocarbon (C16-C21) | 23.1 | 13.8 | Q | mg/Kg-dry | 1 | 11/23/2022 12:05:41 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 13.8 | | mg/Kg-dry | 1 | 11/23/2022 12:05:41 PM |
| Surr: 1-Chlorooctadecane | 77.9 | 50 - 150 | | %Rec | 1 | 11/28/2022 11:56:27 AM |
| Surr: o-Terphenyl | 62.0 | 50 - 150 | | %Rec | 1 | 11/23/2022 12:05:41 PM |

**NOTES:**
Q - Associated calibration verification is below acceptance criteria (77% recovery, nominal range 80-120%). Result may be marginally low-biased.

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Sample Moisture (Percent Moisture)** | | | | Batch ID: R79736 | | Analyst: ALB |
| Percent Moisture | 30.8 | 0.500 | | wt% | 1 | 11/10/2022 1:46:48 PM |

**Work Order:** 2211250
**CLIENT:** Friedman & Bruya
**Project:** 210464

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **MB-38396** | SampType: **MBLK** | Units: **mg/Kg** | Prep Date: **11/4/2022** | RunNo: **79908** |
|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **38396** | | Analysis Date: **11/16/2022** | SeqNo: **1648882** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 20.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 10.0 | | | | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 10.0 | | | | | | | | | |
| Surr: 1-Chlorooctadecane | 84.7 | | 100.0 | | 84.7 | 50 | 150 | | | | |

| Sample ID: **LCS-38396** | SampType: **LCS** | Units: **mg/Kg** | Prep Date: **11/4/2022** | RunNo: **79908** |
|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **38396** | | Analysis Date: **11/16/2022** | SeqNo: **1648883** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 139 | 20.0 | 250.0 | 0 | 55.4 | 16.3 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 99.8 | 10.0 | 125.0 | 0 | 79.8 | 36.7 | 107 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 102 | 10.0 | 125.0 | 0 | 81.9 | 45.3 | 127 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 112 | 10.0 | 125.0 | 0 | 89.2 | 47.3 | 129 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 88.4 | 10.0 | 125.0 | 0 | 70.7 | 35.2 | 139 | | | | |
| Surr: 1-Chlorooctadecane | 87.6 | | 100.0 | | 87.6 | 50 | 150 | | | | |

| Sample ID: **2211097-004AMS** | SampType: **MS** | Units: **mg/Kg-dry** | Prep Date: **11/4/2022** | RunNo: **79908** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **38396** | | Analysis Date: **11/16/2022** | SeqNo: **1648888** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 143 | 21.2 | 264.9 | 0 | 53.8 | 5.66 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 118 | 10.6 | 132.4 | 0 | 89.3 | 9.14 | 134 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 112 | 10.6 | 132.4 | 0 | 84.5 | 23.1 | 139 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 116 | 10.6 | 132.4 | 0 | 87.7 | 24.4 | 134 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 104 | 10.6 | 132.4 | 0 | 78.4 | 21.4 | 152 | | | | |
| Surr: 1-Chlorooctadecane | 90.7 | | 106.0 | | 85.6 | 50 | 150 | | | | |

**Work Order:** 2211250
**CLIENT:** Friedman & Bruya
**Project:** 210464

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **2211097-004AMSD** | SampType: **MSD** | | | Units: **mg/Kg-dry** | | Prep Date: **11/4/2022** | | RunNo: **79908** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **38396** | | | | | Analysis Date: **11/16/2022** | | SeqNo: **1648889** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aliphatic Hydrocarbon (C8-C10) | 139 | 21.2 | 265.4 | 0 | 52.4 | 5.66 | 130 | 142.6 | 2.41 | 30 | |
| Aliphatic Hydrocarbon (C10-C12) | 104 | 10.6 | 132.7 | 0 | 78.3 | 9.14 | 134 | 118.2 | 12.8 | 30 | |
| Aliphatic Hydrocarbon (C12-C16) | 104 | 10.6 | 132.7 | 0 | 78.1 | 23.1 | 139 | 111.9 | 7.63 | 30 | |
| Aliphatic Hydrocarbon (C16-C21) | 106 | 10.6 | 132.7 | 0 | 80.2 | 24.4 | 134 | 116.1 | 8.64 | 30 | |
| Aliphatic Hydrocarbon (C21-C34) | 92.6 | 10.6 | 132.7 | 0 | 69.8 | 21.4 | 152 | 103.9 | 11.4 | 30 | |
| Surr: 1-Chlorooctadecane | 83.0 | | 106.2 | | 78.2 | 50 | 150 | | 0 | | |

| Sample ID: **MB-38396** | SampType: **MBLK** | | | Units: **mg/Kg** | | Prep Date: **11/4/2022** | | RunNo: **79908** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKS** | Batch ID: **38396** | | | | | Analysis Date: **11/16/2022** | | SeqNo: **1648900** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aromatic Hydrocarbon (C8-C10) | ND | 20.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C12-C16) | ND | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | 10.1 | 10.0 | | | | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 10.0 | | | | | | | | | |
| Surr: o-Terphenyl | 101 | | 100.0 | | 101 | 50 | 150 | | | | |

| Sample ID: **LCS-38396** | SampType: **LCS** | | | Units: **mg/Kg** | | Prep Date: **11/4/2022** | | RunNo: **79908** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **38396** | | | | | Analysis Date: **11/16/2022** | | SeqNo: **1648901** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Aromatic Hydrocarbon (C8-C10) | 166 | 20.0 | 250.0 | 0 | 66.5 | 23.1 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 94.5 | 10.0 | 125.0 | 0 | 75.6 | 46.8 | 104 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 116 | 10.0 | 125.0 | 0 | 92.4 | 54.1 | 111 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 98.6 | 10.0 | 125.0 | 0 | 78.9 | 55.4 | 124 | | | | B |
| Aromatic Hydrocarbon (C21-C34) | 112 | 10.0 | 125.0 | 0 | 89.4 | 48.5 | 134 | | | | |
| Surr: o-Terphenyl | 95.9 | | 100.0 | | 95.9 | 50 | 150 | | | | |

**Work Order:** 2211250
**CLIENT:** Friedman & Bruya
**Project:** 210464

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2211097-004AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/4/2022** RunNo: **79908**
Client ID: **BATCH** Batch ID: **38396** Analysis Date: **11/16/2022** SeqNo: **1648908**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 170 | 21.2 | 264.9 | 0 | 64.1 | 11.3 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 97.6 | 10.6 | 132.4 | 0 | 73.7 | 19.3 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 133 | 10.6 | 132.4 | 0 | 100 | 30.3 | 131 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 130 | 10.6 | 132.4 | 19.49 | 83.8 | 23.7 | 139 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 149 | 10.6 | 132.4 | 0 | 112 | 38.8 | 143 | | | | |
| Surr: o-Terphenyl | 104 | | 106.0 | | 98.6 | 50 | 150 | | | | |

Sample ID: **2211097-004AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **11/4/2022** RunNo: **79908**
Client ID: **BATCH** Batch ID: **38396** Analysis Date: **11/16/2022** SeqNo: **1648909**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 162 | 21.2 | 265.4 | 0 | 61.0 | 11.3 | 130 | 169.8 | 4.80 | 30 | |
| Aromatic Hydrocarbon (C10-C12) | 86.7 | 10.6 | 132.7 | 0 | 65.3 | 19.3 | 130 | 97.56 | 11.8 | 30 | |
| Aromatic Hydrocarbon (C12-C16) | 117 | 10.6 | 132.7 | 0 | 87.8 | 30.3 | 131 | 132.6 | 12.9 | 30 | |
| Aromatic Hydrocarbon (C16-C21) | 117 | 10.6 | 132.7 | 19.49 | 73.7 | 23.7 | 139 | 130.5 | 10.6 | 30 | |
| Aromatic Hydrocarbon (C21-C34) | 142 | 10.6 | 132.7 | 0 | 107 | 38.8 | 143 | 148.9 | 4.69 | 30 | |
| Surr: o-Terphenyl | 95.8 | | 106.2 | | 90.2 | 50 | 150 | | 0 | | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2211250 |
| Logged by: | Elisabeth Samoray | Date Received: | 11/10/2022 9:59:00 AM |

## Chain of Custody

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes | ☑ | No | ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | FedEx | | | | |

## Log In

| | | | | | | |
|---|---|---|---|---|---|---|
| 3. | Coolers are present? | Yes | ☑ | No | ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes | ☑ | No | ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes | ☐ | No | ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes | ☑ | No | ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes | ☑ | No | ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes | ☑ | No | ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes | ☑ | No | ☐ | |
| 10. | Are samples properly preserved? | Yes | ☑ | No | ☐ | |
| 11. | Was preservative added to bottles? | Yes | ☐ | No | ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes | ☐ | No | ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes | ☑ | No | ☐ | |
| 14. | Does paperwork match bottle labels? | Yes | ☑ | No | ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes | ☑ | No | ☐ | |
| 16. | Is it clear what analyses were requested? | Yes | ☑ | No | ☐ | |
| 17. | Were all holding times able to be met? | Yes | ☑ | No | ☐ | |

## Special Handling (if applicable)

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes | ☐ | No | ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

| Item # | Temp ºC |
|---|---|
| Sample 1 | 2.8 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2211250



Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont
PROJECT NAME/NO. 210464
PO # C-378
REMARKS * Hold Times *

Page # 1 of 1
TURNAROUND TIME
☑ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW3D-S1-5 | | 10/27/22 | 0910 | Soil | | | X | | | | | | | | | |
| MW3D-S2-10 | | ↓ | 0920 | | | | X | | | | | | | | | |
| MW3D-S4-20 | | ↓ | 0945 | | | | X | | | | | | | | | |
| MW2D-S1-5 | | 10/28/22 | 1140 | | | | X | | | | | | | | | |
| MW2D-S1-5-DUP | | ↓ | 1140 | | | | X | | | | | | | | | |
| MW2D-S2-10 | | ↓ | 1145 | | | | X | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 11/10/22 | 0806 |
| Received by: | | Lily Baumgart | FAI | 11/10/22 | 959 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 23, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on November 2, 2022 from the Kosmos, F&BI 211025 project. There are 27 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA1123R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 2, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos, F&BI 211025 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 211025 -01 | MW1D-S1-5 |
| 211025 -02 | MW1D-S2-10 |
| 211025 -03 | MW1D-S3-15 |
| 211025 -04 | MW1D-S4-20 |
| 211025 -05 | MW1D-S5-25 |
| 211025 -06 | MW1D-S6-30 |
| 211025 -07 | MW1D-S7-35 |
| 211025 -08 | MW1D-S8-40 |
| 211025 -09 | MW1D-S9-45 |
| 211025 -10 | MW1D-S10-50 |
| 211025 -11 | MW1D-S11-55 |
| 211025 -12 | MW1D-S12-60 |
| 211025 -13 | MW1D-S13-6 |

Selenium in the 6020B matrix spike and matrix spike duplicate failed the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 8260D matrix spike and matrix spike duplicate failed the relative percent difference for several compounds. The analytes were not detected therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 11/23/22
Date Received: 11/02/22
Project: Kosmos, F&BI 211025
Date Extracted: 11/10/22
Date Analyzed: 11/11/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING EPA METHOD NWTPH-Gx 8015M**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| MW1D-S1-5<br>211025-01 | <5 | 100 |
| MW1D-S2-10<br>211025-02 | <5 | 98 |
| MW1D-S3-15<br>211025-03 | <5 | 100 |
| MW1D-S4-20<br>211025-04 | <5 | 100 |
| MW1D-S9-45<br>211025-09 | <5 | 99 |
| Method Blank<br>02-2712 MB | <5 | 87 |

Date of Report: 11/23/22
Date Received: 11/02/22
Project: Kosmos, F&BI 211025
Date Extracted: 11/10/22
Date Analyzed: 11/10/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|---|
| MW1D-S1-5<br>211025-01 | <50 | <250 | 96 |
| MW1D-S2-10<br>211025-02 | <50 | <250 | 93 |
| MW1D-S3-15<br>211025-03 | <50 | <250 | 89 |
| MW1D-S4-20<br>211025-04 | <50 | <250 | 97 |
| MW1D-S9-45<br>211025-09 | <50 | <250 | 95 |
| Method Blank<br>02-2744 MB | <50 | <250 | 95 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW1D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-02 |
| Date Analyzed: | 11/17/22 | Data File: | 211025-02.163 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 6.65 |
| Barium | 72.0 |
| Cadmium | <1 |
| Lead | 2.49 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW1D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-02 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 211025-02 x5.146 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 17.5 |
| Copper | 58.5 |
| Nickel | 19.0 |
| Zinc | 59.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW1D-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-04 |
| Date Analyzed: | 11/17/22 | Data File: | 211025-04.164 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | 2.07 |
| Barium | 28.3 |
| Cadmium | <1 |
| Lead | 1.73 |
| Selenium | <5 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW1D-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-04 x5 |
| Date Analyzed: | 11/17/22 | Data File: | 211025-04 x5.151 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Chromium | 8.23 |
| Copper | 49.1 |
| Nickel | 6.80 |
| Zinc | 38.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | I2-795 mb |
| Date Analyzed: | 11/18/22 | Data File: | I2-795 mb.103 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 11/23/22
Date Received: 11/02/22
Project: Kosmos, F&BI 211025
Date Extracted: 11/10/22
Date Analyzed: 11/15/22

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| MW1D-S2-10<br>211025-02 | 0.044 |
| MW1D-S4-20<br>211025-04 | 0.026 |
| Method Blank<br>i2-795 MB | <0.0008 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW1D-S1-5 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-01 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111035.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | 84 | 120 |
| Toluene-d8 | 91 | 73 | 128 |
| 4-Bromofluorobenzene | 99 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW1D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-02 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111036.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | 84 | 120 |
| Toluene-d8 | 98 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW1D-S3-15 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-03 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111037.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 84 | 120 |
| Toluene-d8 | 100 | 73 | 128 |
| 4-Bromofluorobenzene | 95 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW1D-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-04 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111038.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 93 | 84 | 120 |
| Toluene-d8 | 91 | 73 | 128 |
| 4-Bromofluorobenzene | 98 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | 0.0022 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | 0.0012 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0029 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | MW1D-S9-45 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-09 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111039.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 84 | 120 |
| Toluene-d8 | 103 | 73 | 128 |
| 4-Bromofluorobenzene | 97 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 02-2646 mb 1/0.25 |
| Date Analyzed: | 11/10/22 | Data File: | 111007.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 84 | 120 |
| Toluene-d8 | 90 | 73 | 128 |
| 4-Bromofluorobenzene | 100 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.001 |
| Vinyl chloride | <0.001 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.001 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.001 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.001 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.001 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW1D-S2-10 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-02 |
| Date Analyzed: | 11/12/22 | Data File: | 111207.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 51 | 10 | 198 |
| 2-Fluorobiphenyl | 74 | 45 | 117 |
| 2,4,6-Tribromophenol | 71 | 11 | 158 |
| Terphenyl-d14 | 91 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW1D-S4-20 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/02/22 | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 211025-04 |
| Date Analyzed: | 11/12/22 | Data File: | 111208.D |
| Matrix: | Soil | Instrument: | GCMS12 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 51 | 10 | 198 |
| 2-Fluorobiphenyl | 82 | 45 | 117 |
| 2,4,6-Tribromophenol | 79 | 11 | 158 |
| Terphenyl-d14 | 96 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 211025 |
| Date Extracted: | 11/10/22 | Lab ID: | 02-2741 mb |
| Date Analyzed: | 11/11/22 | Data File: | 111110.D |
| Matrix: | Soil | Instrument: | GCMS9 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 55 | 10 | 198 |
| 2-Fluorobiphenyl | 76 | 45 | 117 |
| 2,4,6-Tribromophenol | 82 | 11 | 158 |
| Terphenyl-d14 | 119 | 50 | 124 |

| Compounds: | Concentration mg/kg (ppm) |
|---|---|
| Naphthalene | <0.002 |
| 2-Methylnaphthalene | <0.002 |
| 1-Methylnaphthalene | <0.002 |
| Acenaphthylene | <0.002 |
| Acenaphthene | <0.002 |
| Fluorene | <0.002 |
| Phenanthrene | <0.002 |
| Anthracene | <0.002 |
| Fluoranthene | <0.002 |
| Pyrene | <0.002 |
| Benz(a)anthracene | <0.002 |
| Chrysene | <0.002 |
| Benzo(a)pyrene | <0.002 |
| Benzo(b)fluoranthene | <0.002 |
| Benzo(k)fluoranthene | <0.002 |
| Indeno(1,2,3-cd)pyrene | <0.002 |
| Dibenz(a,h)anthracene | <0.002 |
| Benzo(g,h,i)perylene | <0.002 |

Date of Report: 11/23/22
Date Received: 11/02/22
Project: Kosmos, F&BI 211025

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 211166-01 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Benzene | mg/kg (ppm) | <0.02 | <0.02 | nm |
| Toluene | mg/kg (ppm) | <0.02 | <0.02 | nm |
| Ethylbenzene | mg/kg (ppm) | <0.02 | <0.02 | nm |
| Xylenes | mg/kg (ppm) | <0.06 | <0.06 | nm |
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | mg/kg (ppm) | 0.5 | 100 | 70-130 |
| Toluene | mg/kg (ppm) | 0.5 | 100 | 70-130 |
| Ethylbenzene | mg/kg (ppm) | 0.5 | 100 | 70-130 |
| Xylenes | mg/kg (ppm) | 1.5 | 100 | 70-130 |
| Gasoline | mg/kg (ppm) | 20 | 105 | 70-130 |

Date of Report: 11/23/22
Date Received: 11/02/22
Project: Kosmos, F&BI 211025

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 211025-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | (Wet wt) Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 105 | 105 | 70-130 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 105 | 70-130 |

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Project: Kosmos, F&BI 211025

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 210464-01 x5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | <5 | 104 | 88 | 75-125 | 17 |
| Barium | mg/kg (ppm) | 50 | 67.2 | 142 b | 101 | 75-125 | 34 b |
| Cadmium | mg/kg (ppm) | 10 | <5 | 100 | 91 | 75-125 | 9 |
| Chromium | mg/kg (ppm) | 50 | 13.8 | 95 | 88 | 75-125 | 8 |
| Copper | mg/kg (ppm) | 50 | 42.8 | 97 | 89 | 75-125 | 9 |
| Lead | mg/kg (ppm) | 50 | <5 | 99 | 92 | 75-125 | 7 |
| Nickel | mg/kg (ppm) | 25 | 13.3 | 96 | 87 | 75-125 | 10 |
| Selenium | mg/kg (ppm) | 5 | <5 | 65 vo | 42 vo | 75-125 | 43 vo |
| Silver | mg/kg (ppm) | 10 | <5 | 104 | 96 | 75-125 | 8 |
| Zinc | mg/kg (ppm) | 50 | 31.0 | 94 | 94 | 75-125 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | mg/kg (ppm) | 10 | 88 | 80-120 |
| Barium | mg/kg (ppm) | 50 | 96 | 80-120 |
| Cadmium | mg/kg (ppm) | 10 | 92 | 80-120 |
| Chromium | mg/kg (ppm) | 50 | 96 | 80-120 |
| Copper | mg/kg (ppm) | 50 | 98 | 80-120 |
| Lead | mg/kg (ppm) | 50 | 98 | 80-120 |
| Nickel | mg/kg (ppm) | 25 | 96 | 80-120 |
| Selenium | mg/kg (ppm) | 5 | 84 | 80-120 |
| Silver | mg/kg (ppm) | 10 | 102 | 80-120 |
| Zinc | mg/kg (ppm) | 50 | 90 | 80-120 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 210464-01x10 Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 0.125 | 0.05 | 119 | 111 | 71-125 | 8 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | mg/kg (ppm) | 0.125 | 113 | 68-125 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 210461-03 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1.0 | <0.5 | 9 vo | 8 vo | 10-47 | 12 |
| Chloromethane | mg/kg (ppm) | 1.0 | <0.5 | 29 | 29 | 10-88 | 0 |
| Vinyl chloride | mg/kg (ppm) | 1.0 | <0.05 | 25 | 22 | 10-79 | 13 |
| Bromomethane | mg/kg (ppm) | 1.0 | <0.5 | 58 | 51 | 10-85 | 13 |
| Chloroethane | mg/kg (ppm) | 1.0 | <0.5 | 42 | 37 | 11-106 | 13 |
| Trichlorofluoromethane | mg/kg (ppm) | 1.0 | <0.5 | 30 | 21 | 10-85 | 35 vo |
| Acetone | mg/kg (ppm) | 5.0 | <5 | 67 | 68 | 10-224 | 1 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1.0 | <0.05 | 42 | 38 | 11-105 | 10 |
| Hexane | mg/kg (ppm) | 1.0 | <0.25 | 16 | 12 | 10-106 | 29 vo |
| Methylene chloride | mg/kg (ppm) | 1.0 | <0.5 | 53 | 50 | 10-139 | 6 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1.0 | <0.05 | 78 | 75 | 18-131 | 4 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | <0.05 | 52 | 47 | 16-122 | 10 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1.0 | <0.05 | 57 | 55 | 19-125 | 4 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 54 | 54 | 10-184 | 0 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | <0.05 | 65 | 60 | 18-129 | 8 |
| Chloroform | mg/kg (ppm) | 1.0 | <0.05 | 63 | 59 | 18-126 | 7 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5.0 | <1 | 63 | 63 | 10-190 | 0 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1.0 | <0.05 | 69 | 65 | 19-138 | 6 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1.0 | <0.05 | 64 | 58 | 16-126 | 10 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1.0 | <0.05 | 55 | 48 | 19-129 | 14 |
| Carbon tetrachloride | mg/kg (ppm) | 1.0 | <0.05 | 57 | 51 | 13-125 | 11 |
| Benzene | mg/kg (ppm) | 1.0 | <0.03 | 57 | 52 | 15-129 | 9 |
| Trichloroethene | mg/kg (ppm) | 1.0 | <0.02 | 73 | 69 | 14-127 | 6 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 63 | 57 | 17-137 | 10 |
| Bromodichloromethane | mg/kg (ppm) | 1.0 | <0.05 | 65 | 62 | 24-130 | 5 |
| Dibromomethane | mg/kg (ppm) | 1.0 | <0.05 | 66 | 63 | 20-138 | 5 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5.0 | <1 | 83 | 79 | 21-139 | 5 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | <0.05 | 68 | 63 | 17-135 | 8 |
| Toluene | mg/kg (ppm) | 1.0 | <0.05 | 64 | 58 | 15-129 | 10 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | <0.05 | 73 | 68 | 18-130 | 7 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1.0 | <0.05 | 64 | 60 | 29-128 | 6 |
| 2-Hexanone | mg/kg (ppm) | 5.0 | <0.5 | 71 | 66 | 28-142 | 7 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 63 | 60 | 20-135 | 5 |
| Tetrachloroethene | mg/kg (ppm) | 1.0 | <0.025 | 66 | 60 | 20-121 | 10 |
| Dibromochloromethane | mg/kg (ppm) | 1.0 | <0.05 | 70 | 65 | 11-138 | 7 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1.0 | <0.05 | 70 | 65 | 21-130 | 7 |
| Chlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 70 | 65 | 19-129 | 7 |
| Ethylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 63 | 58 | 23-133 | 8 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | <0.05 | 75 | 69 | 16-127 | 8 |
| m,p-Xylene | mg/kg (ppm) | 2.0 | <0.1 | 67 | 62 | 19-134 | 8 |
| o-Xylene | mg/kg (ppm) | 1.0 | <0.05 | 69 | 65 | 20-132 | 6 |
| Styrene | mg/kg (ppm) | 1.0 | <0.05 | 71 | 66 | 23-127 | 7 |
| Isopropylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 72 | 66 | 21-134 | 9 |
| Bromoform | mg/kg (ppm) | 1.0 | <0.05 | 67 | 66 | 10-142 | 2 |
| n-Propylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 65 | 61 | 10-141 | 6 |
| Bromobenzene | mg/kg (ppm) | 1.0 | <0.05 | 73 | 67 | 10-135 | 9 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 71 | 65 | 20-136 | 9 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | <0.05 | 50 | 48 | 10-234 | 4 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1.0 | <0.05 | 62 | 59 | 10-144 | 5 |
| 2-Chlorotoluene | mg/kg (ppm) | 1.0 | <0.05 | 67 | 63 | 10-139 | 6 |
| 4-Chlorotoluene | mg/kg (ppm) | 1.0 | <0.05 | 66 | 62 | 10-139 | 6 |
| tert-Butylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 72 | 69 | 10-144 | 4 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 71 | 67 | 24-133 | 6 |
| sec-Butylbenzene | mg/kg (ppm) | 1.0 | <0.05 | 68 | 64 | 23-134 | 6 |
| p-Isopropyltoluene | mg/kg (ppm) | 1.0 | <0.05 | 70 | 68 | 25-131 | 3 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 69 | 66 | 10-143 | 4 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 68 | 67 | 10-146 | 1 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1.0 | <0.05 | 72 | 68 | 10-144 | 6 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1.0 | <0.5 | 71 | 68 | 10-163 | 4 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1.0 | <0.25 | 70 | 69 | 10-147 | 1 |
| Hexachlorobutadiene | mg/kg (ppm) | 1.0 | <0.25 | 66 | 61 | 10-162 | 8 |
| Naphthalene | mg/kg (ppm) | 1.0 | <0.05 | 78 | 75 | 30-138 | 4 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1.0 | <0.25 | 72 | 70 | 10-173 | 3 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 1.0 | 46 | 10-93 |
| Chloromethane | mg/kg (ppm) | 1.0 | 59 | 34-101 |
| Vinyl chloride | mg/kg (ppm) | 1.0 | 67 | 47-106 |
| Bromomethane | mg/kg (ppm) | 1.0 | 86 | 38-123 |
| Chloroethane | mg/kg (ppm) | 1.0 | 87 | 44-123 |
| Trichlorofluoromethane | mg/kg (ppm) | 1.0 | 87 | 56-108 |
| Acetone | mg/kg (ppm) | 5.0 | 85 | 24-185 |
| 1,1-Dichloroethene | mg/kg (ppm) | 1.0 | 88 | 61-118 |
| Hexane | mg/kg (ppm) | 1.0 | 80 | 54-142 |
| Methylene chloride | mg/kg (ppm) | 1.0 | 98 | 10-213 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 1.0 | 107 | 70-130 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | 92 | 70-130 |
| 1,1-Dichloroethane | mg/kg (ppm) | 1.0 | 93 | 70-130 |
| 2,2-Dichloropropane | mg/kg (ppm) | 1.0 | 150 | 45-172 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 1.0 | 98 | 70-130 |
| Chloroform | mg/kg (ppm) | 1.0 | 93 | 70-130 |
| 2-Butanone (MEK) | mg/kg (ppm) | 5.0 | 80 | 36-182 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 1.0 | 93 | 66-140 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 1.0 | 106 | 70-130 |
| 1,1-Dichloropropene | mg/kg (ppm) | 1.0 | 91 | 70-130 |
| Carbon tetrachloride | mg/kg (ppm) | 1.0 | 99 | 68-146 |
| Benzene | mg/kg (ppm) | 1.0 | 82 | 70-130 |
| Trichloroethene | mg/kg (ppm) | 1.0 | 86 | 53-133 |
| 1,2-Dichloropropane | mg/kg (ppm) | 1.0 | 82 | 67-137 |
| Bromodichloromethane | mg/kg (ppm) | 1.0 | 87 | 70-130 |
| Dibromomethane | mg/kg (ppm) | 1.0 | 86 | 70-130 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 5.0 | 92 | 70-130 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | 90 | 70-130 |
| Toluene | mg/kg (ppm) | 1.0 | 85 | 63-127 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 1.0 | 95 | 70-130 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 1.0 | 79 | 70-130 |
| 2-Hexanone | mg/kg (ppm) | 5.0 | 81 | 65-148 |
| 1,3-Dichloropropane | mg/kg (ppm) | 1.0 | 76 | 67-135 |
| Tetrachloroethene | mg/kg (ppm) | 1.0 | 98 | 59-138 |
| Dibromochloromethane | mg/kg (ppm) | 1.0 | 90 | 61-154 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 1.0 | 85 | 70-130 |
| Chlorobenzene | mg/kg (ppm) | 1.0 | 89 | 65-133 |
| Ethylbenzene | mg/kg (ppm) | 1.0 | 86 | 60-140 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | 98 | 68-129 |
| m,p-Xylene | mg/kg (ppm) | 2.0 | 91 | 56-145 |
| o-Xylene | mg/kg (ppm) | 1.0 | 94 | 61-137 |
| Styrene | mg/kg (ppm) | 1.0 | 92 | 61-138 |
| Isopropylbenzene | mg/kg (ppm) | 1.0 | 100 | 52-148 |
| Bromoform | mg/kg (ppm) | 1.0 | 90 | 57-166 |
| n-Propylbenzene | mg/kg (ppm) | 1.0 | 90 | 36-162 |
| Bromobenzene | mg/kg (ppm) | 1.0 | 92 | 63-127 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 1.0 | 96 | 43-156 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 1.0 | 84 | 35-184 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 1.0 | 78 | 70-130 |
| 2-Chlorotoluene | mg/kg (ppm) | 1.0 | 89 | 50-146 |
| 4-Chlorotoluene | mg/kg (ppm) | 1.0 | 87 | 47-150 |
| tert-Butylbenzene | mg/kg (ppm) | 1.0 | 91 | 41-154 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 1.0 | 97 | 42-159 |
| sec-Butylbenzene | mg/kg (ppm) | 1.0 | 92 | 25-175 |
| p-Isopropyltoluene | mg/kg (ppm) | 1.0 | 99 | 18-186 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 1.0 | 94 | 49-149 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 1.0 | 92 | 48-149 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 1.0 | 95 | 58-139 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 1.0 | 89 | 70-130 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 1.0 | 100 | 39-166 |
| Hexachlorobutadiene | mg/kg (ppm) | 1.0 | 101 | 41-186 |
| Naphthalene | mg/kg (ppm) | 1.0 | 99 | 67-143 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 1.0 | 99 | 49-165 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 210464-15 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | <0.002 | 68 | 51 | 28-125 | 29 vo |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 80 | 68 | 10-192 | 16 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | <0.002 | 78 | 68 | 10-163 | 14 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | <0.002 | 89 | 81 | 45-128 | 9 |
| Acenaphthene | mg/kg (ppm) | 0.83 | <0.002 | 87 | 79 | 36-125 | 10 |
| Fluorene | mg/kg (ppm) | 0.83 | <0.002 | 95 | 87 | 48-121 | 9 |
| Phenanthrene | mg/kg (ppm) | 0.83 | <0.002 | 95 | 89 | 50-150 | 7 |
| Anthracene | mg/kg (ppm) | 0.83 | <0.002 | 93 | 88 | 50-150 | 6 |
| Fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 102 | 97 | 50-150 | 5 |
| Pyrene | mg/kg (ppm) | 0.83 | <0.002 | 107 | 100 | 40-134 | 7 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 112 | 105 | 50-150 | 6 |
| Chrysene | mg/kg (ppm) | 0.83 | <0.002 | 103 | 96 | 50-150 | 7 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 106 | 100 | 50-150 | 6 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 113 | 107 | 50-150 | 5 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | <0.002 | 109 | 103 | 50-150 | 6 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | <0.002 | 109 | 101 | 41-134 | 8 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | <0.002 | 109 | 101 | 44-130 | 8 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | <0.002 | 104 | 97 | 33-131 | 7 |

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## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Naphthalene | mg/kg (ppm) | 0.83 | 78 | 58-108 |
| 2-Methylnaphthalene | mg/kg (ppm) | 0.83 | 95 | 67-109 |
| 1-Methylnaphthalene | mg/kg (ppm) | 0.83 | 93 | 66-107 |
| Acenaphthylene | mg/kg (ppm) | 0.83 | 105 | 70-130 |
| Acenaphthene | mg/kg (ppm) | 0.83 | 101 | 66-112 |
| Fluorene | mg/kg (ppm) | 0.83 | 111 | 67-117 |
| Phenanthrene | mg/kg (ppm) | 0.83 | 105 | 70-130 |
| Anthracene | mg/kg (ppm) | 0.83 | 105 | 70-130 |
| Fluoranthene | mg/kg (ppm) | 0.83 | 113 | 70-130 |
| Pyrene | mg/kg (ppm) | 0.83 | 115 | 70-130 |
| Benz(a)anthracene | mg/kg (ppm) | 0.83 | 120 | 70-130 |
| Chrysene | mg/kg (ppm) | 0.83 | 110 | 70-130 |
| Benzo(a)pyrene | mg/kg (ppm) | 0.83 | 117 | 68-120 |
| Benzo(b)fluoranthene | mg/kg (ppm) | 0.83 | 120 | 69-125 |
| Benzo(k)fluoranthene | mg/kg (ppm) | 0.83 | 116 | 70-130 |
| Indeno(1,2,3-cd)pyrene | mg/kg (ppm) | 0.83 | 115 | 67-129 |
| Dibenz(a,h)anthracene | mg/kg (ppm) | 0.83 | 115 | 67-128 |
| Benzo(g,h,i)perylene | mg/kg (ppm) | 0.83 | 109 | 64-127 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

211025

# SAMPLE CHAIN OF CUSTODY

11/02/22 AO4/CI3

Page # 1 of 2

Report To Angie Goodwin

Company Haley & Aldrich

Address

City, State, ZIP

Phone Email Agoodwin@haley aldrich

SAMPLERS (*signature*)

PROJECT NAME: KOSMOS

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☒ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Metals (12) | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW1D-S1-5 | 01 A-F | 10/31/22 | 1135 | S | 6 | X | X | | | X | | | X | | | | X per AG |
| MW1D-S2-10 | 02 | | 1155 | | | X | X | | | X | X | | X | X | | | 11/9/22 MC |
| MW1D-S3-15 | 03 | | 1210 | | | X | X | | | X | | | X | | | | Hold EPH/VPH |
| MW1D-S4-20 | 04 | | 1220 | | | X | X | | | X | X | | X | X | | | per AG ME 11/10/22 |
| MW1D-S5-25 | 05 | | 1300 | | | | | | | | | | | | | | |
| MW1D-S6-30 | 06 | | 1310 | | | | | | | | | | | | | | |
| MW1D-S7-35 | 07 | | 1330 | | | | | | | | | | | | | | |
| MW1D-S8-40 | 08 | | 1340 | | | | | | | | | | | | | | |
| MW1D-S9-45 | 09 | | 1355 | | | X | X | | | X | | | X | | | | |
| MW1D-S10-50 | 10 | ↓ | 1405 | ↓ | ↓ | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Zach Stephens | Haley & Aldrich | 11/2/22 | 1022 |
| Received by: | Nham Pham | FEBT | 11/2/22 | 1022 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 2 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

211025

# SAMPLE CHAIN OF CUSTODY

11/02/22

A04/CI3

Page # 2 of 2

Report To Angie Goodwin

Company Haley & Aldrich

Address

City, State, ZIP

Phone Email Agoodwin@haley aldrich.com

SAMPLERS (*signature*)

PROJECT NAME: KOSMOS

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW1D-S11-55 | 11 A-E | 10/31/22 | 1410 | S | 6 | | | | | | | | | | | | |
| MW1D-S12-60 | 12 | " | 1415 | " | " | | | | | | | | | | | | |
| MW1D-S13-6 | 13 | 10/31/22 | 1110 | " | " | | | | | | | | | | | | |
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| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Zach Stephens | H&A | 11/2 | 1022 |
| Received by: | Nhan Pham | FEBT | 11/2/22 | 1022 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 2 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 23, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on November 3, 2022 from the Kosmos, F&BI 211082 project. There are 18 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA1123R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 3, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos, F&BI 211082 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 211082 -01 | SW-1 |
| 211082 -02 | SW-2 |
| 211082 -03 | SW-3 |

The samples were sent to Fremont Analytical for hexavalent chromium analysis. The report is enclosed.

cPAHs were detected in the 8270E method blank. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211082
Date Extracted: 11/07/22
Date Analyzed: 11/07/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Gasoline Range | Surrogate (% Recovery)<br>(Limit 50-150) |
|---|---|---|---|---|---|---|
| SW-1<br>211082-01 | <1 | <1 | <1 | <3 | <100 | 120 |
| SW-2<br>211082-02 | <1 | <1 | <1 | <3 | <100 | 120 |
| SW-3<br>211082-03 | <1 | <1 | <1 | <3 | <100 | 110 |
| Method Blank<br>02-2589 MB | <1 | <1 | <1 | <3 | <100 | 109 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211082
Date Extracted: 11/07/22
Date Analyzed: 11/07/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL10 AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 41-152) |
|---|---|---|---|
| SW-1<br>211082-01 1/0.4 | <50 | <250 | 87 |
| SW-2<br>211082-02 1/0.4 | 50 x | <250 | 89 |
| SW-3<br>211082-03 1/0.4 | <50 | <250 | 88 |
| Method Blank<br>02-2696 MB 1/0.4 | <50 | <250 | 84 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SW-1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211082 |
| Date Extracted: | 11/16/22 | Lab ID: | 211082-01 |
| Date Analyzed: | 11/17/22 | Data File: | 211082-01.258 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <0.2 j |
| Cadmium | <1 |
| Chromium | 1.01 |
| Lead | <1 |
| Nickel | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SW-2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211082 |
| Date Extracted: | 11/16/22 | Lab ID: | 211082-02 |
| Date Analyzed: | 11/17/22 | Data File: | 211082-02.259 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <0.2 j |
| Cadmium | <1 |
| Chromium | <1 |
| Lead | <1 |
| Nickel | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | SW-3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211082 |
| Date Extracted: | 11/16/22 | Lab ID: | 211082-03 |
| Date Analyzed: | 11/17/22 | Data File: | 211082-03.260 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <0.2 j |
| Cadmium | <1 |
| Chromium | 1.30 |
| Lead | <1 |
| Nickel | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 211082 |
| Date Extracted: | 11/16/22 | Lab ID: | I2-817 mb |
| Date Analyzed: | 11/16/22 | Data File: | I2-817 mb.133 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <0.2 |
| Cadmium | <1 |
| Chromium | <1 |
| Lead | <1 |
| Nickel | <1 |
| Zinc | <5 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211082
Date Extracted: 11/15/22
Date Analyzed: 11/18/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| SW-1<br>211082-01 | <0.01 |
| SW-2<br>211082-02 | <0.01 |
| SW-3<br>211082-03 | <0.01 |
| Method Blank<br>I2-810 MB | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SW-1 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211082 |
| Date Extracted: | 11/11/22 | Lab ID: | 211082-01 1/0.5 |
| Date Analyzed: | 11/14/22 | Data File: | 111413.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Terphenyl-d14 | 119 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.015 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.015 |
| Benzo(k)fluoranthene | <0.015 |
| Indeno(1,2,3-cd)pyrene | <0.015 |
| Dibenz(a,h)anthracene | <0.015 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SW-2 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211082 |
| Date Extracted: | 11/11/22 | Lab ID: | 211082-02 1/0.5 |
| Date Analyzed: | 11/14/22 | Data File: | 111414.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Terphenyl-d14 | 118 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | SW-3 | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211082 |
| Date Extracted: | 11/11/22 | Lab ID: | 211082-03 1/0.5 |
| Date Analyzed: | 11/14/22 | Data File: | 111415.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Terphenyl-d14 | 122 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benz(a)anthracene | <0.01 |
| Chrysene | <0.01 |
| Benzo(a)pyrene | <0.01 |
| Benzo(b)fluoranthene | <0.01 |
| Benzo(k)fluoranthene | <0.01 |
| Indeno(1,2,3-cd)pyrene | <0.01 |
| Dibenz(a,h)anthracene | <0.01 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 211082 |
| Date Extracted: | 11/11/22 | Lab ID: | 02-2702 mb2 1/0.5 |
| Date Analyzed: | 11/14/22 | Data File: | 111412.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Terphenyl-d14 | 128 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Benz(a)anthracene | 0.037 lc |
| Chrysene | 0.034 lc |
| Benzo(a)pyrene | 0.030 lc |
| Benzo(b)fluoranthene | 0.035 lc |
| Benzo(k)fluoranthene | 0.031 lc |
| Indeno(1,2,3-cd)pyrene | 0.029 lc |
| Dibenz(a,h)anthracene | 0.028 lc |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211082

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 211082-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Benzene | ug/L (ppb) | <1 | <1 | nm |
| Toluene | ug/L (ppb) | <1 | <1 | nm |
| Ethylbenzene | ug/L (ppb) | <1 | <1 | nm |
| Xylenes | ug/L (ppb) | <3 | <3 | nm |
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | ug/L (ppb) | 50 | 108 | 70-130 |
| Toluene | ug/L (ppb) | 50 | 106 | 70-130 |
| Ethylbenzene | ug/L (ppb) | 50 | 114 | 70-130 |
| Xylenes | ug/L (ppb) | 150 | 107 | 70-130 |
| Gasoline | ug/L (ppb) | 1,000 | 100 | 70-130 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211082

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 91 | 94 | 70-130 | 5 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211082

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 211176-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 98 | 96 | 75-125 | 2 |
| Cadmium | ug/L (ppb) | 5 | <1 | 101 | 100 | 75-125 | 1 |
| Chromium | ug/L (ppb) | 20 | 4.41 | 95 | 96 | 75-125 | 1 |
| Lead | ug/L (ppb) | 10 | 3.09 | 93 | 95 | 75-125 | 2 |
| Nickel | ug/L (ppb) | 20 | <1 | 95 | 97 | 75-125 | 2 |
| Zinc | ug/L (ppb) | 50 | 26.3 | 103 | 101 | 75-125 | 2 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 93 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 94 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 95 | 80-120 |
| Lead | ug/L (ppb) | 10 | 97 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 97 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211082

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 211082-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.1 | 111 | 111 | 71-125 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 102 | 68-125 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211082

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Benz(a)anthracene | ug/L (ppb) | 5 | 107 | 116 | 70-130 | 8 |
| Chrysene | ug/L (ppb) | 5 | 99 | 109 | 67-119 | 10 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 101 | 113 | 68-126 | 11 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 106 | 120 | 62-130 | 12 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 97 | 110 | 67-125 | 13 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 105 | 121 | 63-131 | 14 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 105 | 120 | 62-133 | 13 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

211082

# SAMPLE CHAIN OF CUSTODY 11/03/22

VW2 / AI&P / EQ 4

Page# ____ of ____

Report To Angie Goodwin

Company Haley & Aldrich

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: Kosmos

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [X] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | cPAHs | Cr VI | Tot. mercury | Tot. metals | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-1 | 01 A-L | 11/3/22 | 1100 | water | 13 | X | X | X | | | | | X | X | X | X | As, Cd, Cr, Pb, Ni, Zn |
| SW-2 | 02 ↓ | ↓ | 1120 | ↓ | 12 | X | X | X | | | | - | X | X | X | X | |
| SW-3 | 03 A-K | ↓ | 1140 | | 13 | X | X | X | | | | | X | X | X | X | |
| | | | | | | | | | | | | | | | | | |
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| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Nakahara | H/A | 11/3/22 | 1848 |
| Received by: | BISRAT TADESSE | FSI | 11/3/22 | 1848 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 5 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 211082**
**Work Order Number: 2211108**

November 09, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 3 sample(s) on 11/4/2022 for the analyses presented in the following report.

***Hexavalent Chromium by SM 3500 Cr B***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *11/09/2022*

**CLIENT:** Friedman & Bruya
**Project:** 211082
**Work Order:** 2211108

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2211108-001 | SW-1 | 11/03/2022 11:00 AM | 11/04/2022 8:55 AM |
| 2211108-002 | SW-2 | 11/03/2022 11:20 AM | 11/04/2022 8:55 AM |
| 2211108-003 | SW-3 | 11/03/2022 11:40 AM | 11/04/2022 8:55 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2211108**
Date: **11/9/2022**

**CLIENT:** Friedman & Bruya
**Project:** 211082

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2211108**
Date Reported: **11/9/2022**

**CLIENT:** Friedman & Bruya
**Project:** 211082

**Lab ID:** 2211108-001 **Collection Date:** 11/3/2022 11:00:00 AM
**Client Sample ID:** **SW-1** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79575 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | H | mg/L | 1 | 11/4/2022 11:51:00 AM |

**Lab ID:** 2211108-002 **Collection Date:** 11/3/2022 11:20:00 AM
**Client Sample ID:** **SW-2** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79575 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | H | mg/L | 1 | 11/4/2022 11:56:00 AM |

**Lab ID:** 2211108-003 **Collection Date:** 11/3/2022 11:40:00 AM
**Client Sample ID:** **SW-3** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79575 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | H | mg/L | 1 | 11/4/2022 1:01:00 PM |

**Work Order:** 2211108
**CLIENT:** Friedman & Bruya
**Project:** 211082

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **MB-79575** | SampType: **MBLK** | | | Units: **mg/L** | | Prep Date: **11/4/2022** | | | RunNo: **79575** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R79575** | | | | | Analysis Date: **11/4/2022** | | | SeqNo: **1640471** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0450 | | | | | | | | | |

| Sample ID: **LCS-79575** | SampType: **LCS** | | | Units: **mg/L** | | Prep Date: **11/4/2022** | | | RunNo: **79575** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R79575** | | | | | Analysis Date: **11/4/2022** | | | SeqNo: **1640472** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.261 | 0.0450 | 0.2500 | 0 | 104 | 82.2 | 115 | | | | |

| Sample ID: **2211107-001ADUP** | SampType: **DUP** | | | Units: **mg/L** | | Prep Date: **11/4/2022** | | | RunNo: **79575** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **R79575** | | | | | Analysis Date: **11/4/2022** | | | SeqNo: **1640474** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0450 | | | | | | 0 | | 20 | |

| Sample ID: **2211107-001AMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **11/4/2022** | | | RunNo: **79575** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **R79575** | | | | | Analysis Date: **11/4/2022** | | | SeqNo: **1640475** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.266 | 0.0450 | 0.2500 | 0 | 106 | 59.4 | 125 | | | | |

| Sample ID: **2211107-001AMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **11/4/2022** | | | RunNo: **79575** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **R79575** | | | | | Analysis Date: **11/4/2022** | | | SeqNo: **1640476** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.270 | 0.0450 | 0.2500 | 0 | 108 | 59.4 | 125 | 0.2656 | 1.64 | 20 | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | **FB** | Work Order Number: | **2211108** |
| Logged by: | **Elisabeth Samoray** | Date Received: | **11/4/2022 8:55:00 AM** |

## Chain of Custody

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes | ☑ | No ☐ | Not Present | ☐ |
| 2. | How was the sample delivered? | Client | | | | |

## Log In

| | | | | | | |
|---|---|---|---|---|---|---|
| 3. | Coolers are present? | Yes | ☑ | No ☐ | NA | ☐ |
| 4. | Shipping container/cooler in good condition? | Yes | ☑ | No ☐ | | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes | ☐ | No ☐ | Not Present | ☑ |
| 6. | Was an attempt made to cool the samples? | Yes | ☑ | No ☐ | NA | ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes | ☑ | No ☐ | NA | ☐ |
| 8. | Sample(s) in proper container(s)? | Yes | ☑ | No ☐ | | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes | ☑ | No ☐ | | |
| 10. | Are samples properly preserved? | Yes | ☑ | No ☐ | | |
| 11. | Was preservative added to bottles? | Yes | ☐ | No ☑ | NA | ☐ |
| 12. | Is there headspace in the VOA vials? | Yes | ☐ | No ☐ | NA | ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes | ☑ | No ☐ | | |
| 14. | Does paperwork match bottle labels? | Yes | ☑ | No ☐ | | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes | ☑ | No ☐ | | |
| 16. | Is it clear what analyses were requested? | Yes | ☑ | No ☐ | | |
| 17. | Were all holding times able to be met? | Yes | ☑ | No ☐ | | |

## Special Handling (if applicable)

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes | ☑ | No ☐ | NA | ☐ |

| | | | |
|---|---|---|---|
| Person Notified: | Michael Erdahl | Date: | 11/4/2022 |
| By Whom: | Elisabeth Samoray | Via: | ☑ eMail ☐ Phone ☐ Fax ☐ In Person |
| Regarding: | COC saying each sample has 2 parts but sample on arrivng with 1 | | |
| Client Instructions: | proceed with 1 bottle | | |

19. Additional remarks:

**Item Information**

| Item # | Temp ºC |
|---|---|
| Sample 1 | 1.4 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2211108



Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO. 211082

PO # C-393

REMARKS

TURNAROUND TIME
- [x] Standard TAT
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Cr VI | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-1 | | 11/3/22 | 1100 | $H_2O$ | 2 | | | | X | | | | | | |
| SW-2 | | " | 1120 | " | 2 | | | | X | | | | | | |
| SW-3 | | " | 1140 | " | 2 | | | | X | | | | | | |

| Friedman & Bruya, Inc.<br>3012 16th Avenue West<br>Seattle, WA 98119-2029<br>Ph. (206) 285-8282<br>Fax (206) 283-5044 | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| | Relinquished by: | Michael Erdahl | Friedman & Bruya | 11/4/22 | 0727 |
| | Received by: Clare O'Connor | Clare O'Connor | FAI | 11/4/22 | 8:55 |
| | Relinquished by: | | | | |
| | Received by: | | | | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 23, 2022

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on November 3, 2022 from the Kosmos, F&BI 211083 project. There are 40 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA1123R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 3, 2022 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos, F&BI 211083 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 211083 -01 | MW-1D |
| 211083 -02 | MW-1DD |
| 211083 -03 | MW-2D |
| 211083 -04 | MW-3D |
| 211083 -05 | MW-4D |
| 211083 -06 | Trip Blank |

The requested samples were subcontracted to Fremont Analytical for hexavalent chromium analysis. The report is enclosed.

All quality control requirements were acceptable.

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083
Date Extracted: 11/07/22
Date Analyzed: 11/07/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| MW-1D<br>211083-01 | <100 | 95 |
| MW-1DD<br>211083-02 | <100 | 100 |
| MW-2D<br>211083-03 | <100 | 95 |
| MW-3D<br>211083-04 | <100 | 95 |
| MW-4D<br>211083-05 | <100 | 91 |
| Method Blank<br>02-2589 MB | <100 | 110 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083
Date Extracted: 11/07/22
Date Analyzed: 11/07/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL10 AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 41-152) |
|---|---|---|---|
| MW-1D<br>211083-01 1/0.4 | <50 | <250 | 88 |
| MW-1DD<br>211083-02 1/0.4 | <50 | <250 | 88 |
| MW-2D<br>211083-03 1/0.4 | <50 | <250 | 87 |
| MW-3D<br>211083-04 1/0.4 | <50 | <250 | 88 |
| MW-4D<br>211083-05 1/0.4 | <50 | <250 | 87 |
| Method Blank<br>02-2696 MB | <50 | <250 | 84 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1D f | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/10/22 | Lab ID: | 211083-01 |
| Date Analyzed: | 11/13/22 | Data File: | 211083-01.192 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 j |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1DD f | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/10/22 | Lab ID: | 211083-02 |
| Date Analyzed: | 11/13/22 | Data File: | 211083-02.193 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.10 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 j |
| Lead | <1 |
| Nickel | 1.09 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2D f | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/10/22 | Lab ID: | 211083-03 |
| Date Analyzed: | 11/13/22 | Data File: | 211083-03.194 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 j |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3D f | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/10/22 | Lab ID: | 211083-04 |
| Date Analyzed: | 11/15/22 | Data File: | 211083-04.138 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4D f | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/10/22 | Lab ID: | 211083-05 |
| Date Analyzed: | 11/15/22 | Data File: | 211083-05.139 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank f | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/10/22 | Lab ID: | I2-794 mb |
| Date Analyzed: | 11/11/22 | Data File: | I2-794 mb.115 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <5 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/16/22 | Lab ID: | 211083-01 |
| Date Analyzed: | 11/17/22 | Data File: | 211083-01.249 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.41 |
| Cadmium | <1 |
| Chromium | 1.65 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.47 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/16/22 | Lab ID: | 211083-02 |
| Date Analyzed: | 11/17/22 | Data File: | 211083-02.250 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.24 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.27 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/16/22 | Lab ID: | 211083-03 |
| Date Analyzed: | 11/17/22 | Data File: | 211083-03.251 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 5.65 |
| Cadmium | <1 |
| Chromium | 1.64 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 2.19 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/16/22 | Lab ID: | 211083-04 |
| Date Analyzed: | 11/17/22 | Data File: | 211083-04.252 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.58 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.07 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/16/22 | Lab ID: | 211083-05 |
| Date Analyzed: | 11/17/22 | Data File: | 211083-05.253 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 2.93 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.17 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/16/22 | Lab ID: | I2-817 mb |
| Date Analyzed: | 11/16/22 | Data File: | I2-817 mb.133 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083
Date Extracted: 11/15/22
Date Analyzed: 11/18/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| MW-1D<br>211083-01 | <0.01 |
| MW-1DD<br>211083-02 | <0.01 |
| MW-2D<br>211083-03 | <0.01 |
| MW-3D<br>211083-04 | <0.01 |
| MW-4D<br>211083-05 | <0.01 |
| Method Blank<br>i2-810 MB | <0.01 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083
Date Extracted: 11/15/22
Date Analyzed: 11/18/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Dissolved Mercury |
|---|---|
| MW-1D<br>211083-01 | <0.01 |
| MW-1DD<br>211083-02 | <0.01 |
| MW-2D<br>211083-03 | <0.01 |
| MW-3D<br>211083-04 | <0.01 |
| MW-4D<br>211083-05 | <0.01 |
| Method Blank<br>i2-809 MB | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/14/22 | Lab ID: | 211083-01 |
| Date Analyzed: | 11/14/22 | Data File: | 111426.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 106 | 71 | 132 |
| Toluene-d8 | 102 | 68 | 139 |
| 4-Bromofluorobenzene | 100 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/14/22 | Lab ID: | 211083-02 |
| Date Analyzed: | 11/14/22 | Data File: | 111427.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 71 | 132 |
| Toluene-d8 | 99 | 68 | 139 |
| 4-Bromofluorobenzene | 96 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/14/22 | Lab ID: | 211083-03 |
| Date Analyzed: | 11/14/22 | Data File: | 111428.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 88 | 71 | 132 |
| Toluene-d8 | 93 | 68 | 139 |
| 4-Bromofluorobenzene | 96 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/14/22 | Lab ID: | 211083-04 |
| Date Analyzed: | 11/14/22 | Data File: | 111429.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 93 | 71 | 132 |
| Toluene-d8 | 93 | 68 | 139 |
| 4-Bromofluorobenzene | 97 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/14/22 | Lab ID: | 211083-05 |
| Date Analyzed: | 11/14/22 | Data File: | 111430.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | WE |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 71 | 132 |
| Toluene-d8 | 102 | 68 | 139 |
| 4-Bromofluorobenzene | 100 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/09/22 | Lab ID: | 02-2638 mb |
| Date Analyzed: | 11/09/22 | Data File: | 110908.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 78 | 126 |
| Toluene-d8 | 104 | 84 | 115 |
| 4-Bromofluorobenzene | 105 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/11/22 | Lab ID: | 211083-01 |
| Date Analyzed: | 11/14/22 | Data File: | 111416.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 94 | 15 | 144 |
| 2-Fluorobiphenyl | 95 | 25 | 128 |
| 2,4,6-Tribromophenol | 81 | 10 | 142 |
| Terphenyl-d14 | 125 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/11/22 | Lab ID: | 211083-02 |
| Date Analyzed: | 11/14/22 | Data File: | 111417.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 88 | 15 | 144 |
| 2-Fluorobiphenyl | 91 | 25 | 128 |
| 2,4,6-Tribromophenol | 81 | 10 | 142 |
| Terphenyl-d14 | 124 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/11/22 | Lab ID: | 211083-03 |
| Date Analyzed: | 11/14/22 | Data File: | 111418.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 76 | 15 | 144 |
| 2-Fluorobiphenyl | 83 | 25 | 128 |
| 2,4,6-Tribromophenol | 74 | 10 | 142 |
| Terphenyl-d14 | 127 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/11/22 | Lab ID: | 211083-04 |
| Date Analyzed: | 11/14/22 | Data File: | 111419.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 79 | 15 | 144 |
| 2-Fluorobiphenyl | 88 | 25 | 128 |
| 2,4,6-Tribromophenol | 84 | 10 | 142 |
| Terphenyl-d14 | 125 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 11/03/22 | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/11/22 | Lab ID: | 211083-05 |
| Date Analyzed: | 11/14/22 | Data File: | 111420.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 89 | 15 | 144 |
| 2-Fluorobiphenyl | 94 | 25 | 128 |
| 2,4,6-Tribromophenol | 86 | 10 | 142 |
| Terphenyl-d14 | 124 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 211083 |
| Date Extracted: | 11/11/22 | Lab ID: | 02-2702 mb |
| Date Analyzed: | 11/14/22 | Data File: | 111411.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 96 | 15 | 144 |
| 2-Fluorobiphenyl | 104 | 25 | 128 |
| 2,4,6-Tribromophenol | 88 | 10 | 142 |
| Terphenyl-d14 | 130 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083
Date Extracted: 11/10/22
Date Analyzed: 11/14/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL SUSPENDED SOLIDS
BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| MW-1D<br>211083-01 | 9.6 |
| MW-1DD<br>211083-02 | <5 |
| MW-2D<br>211083-03 | 23 |
| MW-3D<br>211083-04 | 5.6 |
| MW-4D<br>211083-05 | 13 |
| Method Blank<br>02-2749 mb | <5 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 211082-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 100 | 70-130 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 91 | 94 | 70-130 | 5 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 211079-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 65.7 | 103 | 54 b | 75-125 | 62 b |
| Barium | ug/L (ppb) | 50 | 324 | 134 b | 103 | 75-125 | 26 b |
| Cadmium | ug/L (ppb) | 5 | <1 | 97 | 96 | 75-125 | 1 |
| Chromium | ug/L (ppb) | 20 | <1 | 97 | 95 | 75-125 | 2 |
| Copper | ug/L (ppb) | 20 | <5 | 92 | 89 | 75-125 | 3 |
| Lead | ug/L (ppb) | 10 | <1 | 84 | 80 | 75-125 | 5 |
| Nickel | ug/L (ppb) | 20 | 3.08 | 94 | 91 | 75-125 | 3 |
| Selenium | ug/L (ppb) | 5 | 1.11 | 101 | 99 | 75-125 | 2 |
| Silver | ug/L (ppb) | 5 | <1 | 91 | 89 | 75-125 | 2 |
| Zinc | ug/L (ppb) | 50 | <5 | 94 | 91 | 75-125 | 3 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 83 | 80-120 |
| Barium | ug/L (ppb) | 50 | 95 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 94 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 94 | 80-120 |
| Copper | ug/L (ppb) | 20 | 101 | 80-120 |
| Lead | ug/L (ppb) | 10 | 96 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 90 | 80-120 |
| Silver | ug/L (ppb) | 5 | 92 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 211176-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 98 | 96 | 75-125 | 2 |
| Barium | ug/L (ppb) | 50 | 20.4 | 96 | 98 | 75-125 | 2 |
| Cadmium | ug/L (ppb) | 5 | <1 | 101 | 100 | 75-125 | 1 |
| Chromium | ug/L (ppb) | 20 | 4.41 | 95 | 96 | 75-125 | 1 |
| Copper | ug/L (ppb) | 20 | <5 | 97 | 98 | 75-125 | 1 |
| Lead | ug/L (ppb) | 10 | 3.09 | 93 | 95 | 75-125 | 2 |
| Nickel | ug/L (ppb) | 20 | <1 | 95 | 97 | 75-125 | 2 |
| Selenium | ug/L (ppb) | 5 | <1 | 104 | 107 | 75-125 | 3 |
| Silver | ug/L (ppb) | 5 | <1 | 95 | 96 | 75-125 | 1 |
| Zinc | ug/L (ppb) | 50 | 26.3 | 103 | 101 | 75-125 | 2 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 93 | 80-120 |
| Barium | ug/L (ppb) | 50 | 92 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 94 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 95 | 80-120 |
| Copper | ug/L (ppb) | 20 | 102 | 80-120 |
| Lead | ug/L (ppb) | 10 | 97 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 97 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 92 | 80-120 |
| Silver | ug/L (ppb) | 5 | 94 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 211082-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.1 | 111 | 111 | 71-125 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 102 | 68-125 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 211060-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.01 | 98 | 95 | 71-125 | 3 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 101 | 68-125 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | 84 | 90 | 46-206 | 7 |
| Chloromethane | ug/L (ppb) | 10 | 85 | 82 | 70-142 | 4 |
| Vinyl chloride | ug/L (ppb) | 10 | 90 | 90 | 70-130 | 0 |
| Bromomethane | ug/L (ppb) | 10 | 100 | 104 | 56-197 | 4 |
| Chloroethane | ug/L (ppb) | 10 | 92 | 92 | 70-130 | 0 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | 85 | 88 | 70-130 | 3 |
| Acetone | ug/L (ppb) | 50 | 54 | 59 | 10-140 | 9 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | 92 | 92 | 70-130 | 0 |
| Hexane | ug/L (ppb) | 10 | 89 | 87 | 54-136 | 2 |
| Methylene chloride | ug/L (ppb) | 10 | 85 | 88 | 43-134 | 3 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | 101 | 101 | 70-130 | 0 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | 91 | 92 | 70-130 | 1 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | 93 | 93 | 70-130 | 0 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | 85 | 86 | 70-130 | 1 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | 96 | 96 | 70-130 | 0 |
| Chloroform | ug/L (ppb) | 10 | 90 | 88 | 70-130 | 2 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 83 | 88 | 17-154 | 6 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | 96 | 94 | 70-130 | 2 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | 96 | 96 | 70-130 | 0 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | 97 | 94 | 70-130 | 3 |
| Carbon tetrachloride | ug/L (ppb) | 10 | 96 | 94 | 70-130 | 2 |
| Benzene | ug/L (ppb) | 10 | 103 | 101 | 70-130 | 2 |
| Trichloroethene | ug/L (ppb) | 10 | 93 | 91 | 70-130 | 2 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | 104 | 98 | 70-130 | 6 |
| Bromodichloromethane | ug/L (ppb) | 10 | 104 | 103 | 70-130 | 1 |
| Dibromomethane | ug/L (ppb) | 10 | 105 | 100 | 70-130 | 5 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 109 | 110 | 68-130 | 1 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | 108 | 105 | 69-131 | 3 |
| Toluene | ug/L (ppb) | 10 | 95 | 95 | 70-130 | 0 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | 107 | 114 | 70-130 | 6 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | 109 | 110 | 70-130 | 1 |
| 2-Hexanone | ug/L (ppb) | 50 | 100 | 99 | 45-138 | 1 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | 110 | 106 | 70-130 | 4 |
| Tetrachloroethene | ug/L (ppb) | 10 | 97 | 97 | 70-130 | 0 |
| Dibromochloromethane | ug/L (ppb) | 10 | 102 | 103 | 60-148 | 1 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | 102 | 102 | 70-130 | 0 |
| Chlorobenzene | ug/L (ppb) | 10 | 100 | 98 | 70-130 | 2 |
| Ethylbenzene | ug/L (ppb) | 10 | 95 | 95 | 70-130 | 0 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | 94 | 94 | 70-130 | 0 |
| m,p-Xylene | ug/L (ppb) | 20 | 94 | 95 | 70-130 | 1 |
| o-Xylene | ug/L (ppb) | 10 | 94 | 95 | 70-130 | 1 |
| Styrene | ug/L (ppb) | 10 | 104 | 102 | 70-130 | 2 |
| Isopropylbenzene | ug/L (ppb) | 10 | 96 | 96 | 70-130 | 0 |
| Bromoform | ug/L (ppb) | 10 | 101 | 105 | 69-138 | 4 |
| n-Propylbenzene | ug/L (ppb) | 10 | 103 | 101 | 70-130 | 2 |
| Bromobenzene | ug/L (ppb) | 10 | 105 | 102 | 70-130 | 3 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | 102 | 102 | 70-130 | 0 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | 111 | 107 | 70-130 | 4 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | 104 | 97 | 70-130 | 7 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | 102 | 98 | 70-130 | 4 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | 107 | 102 | 70-130 | 5 |
| tert-Butylbenzene | ug/L (ppb) | 10 | 105 | 103 | 70-130 | 2 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | 103 | 100 | 70-130 | 3 |
| sec-Butylbenzene | ug/L (ppb) | 10 | 103 | 101 | 70-130 | 2 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | 103 | 98 | 70-130 | 5 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | 101 | 97 | 70-130 | 4 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | 102 | 98 | 70-130 | 4 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | 101 | 96 | 70-130 | 5 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | 105 | 103 | 70-130 | 2 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | 99 | 94 | 70-130 | 5 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | 91 | 88 | 70-130 | 3 |
| Naphthalene | ug/L (ppb) | 10 | 105 | 102 | 70-130 | 3 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | 102 | 99 | 70-130 | 3 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 5 | 61 | 68 | 50-104 | 11 |
| 2-Methylnaphthalene | ug/L (ppb) | 5 | 58 | 70 | 54-109 | 19 |
| 1-Methylnaphthalene | ug/L (ppb) | 5 | 57 | 69 | 55-108 | 19 |
| Acenaphthylene | ug/L (ppb) | 5 | 80 | 91 | 60-114 | 13 |
| Acenaphthene | ug/L (ppb) | 5 | 77 | 87 | 57-110 | 12 |
| Fluorene | ug/L (ppb) | 5 | 79 | 89 | 61-115 | 12 |
| Phenanthrene | ug/L (ppb) | 5 | 85 | 96 | 63-113 | 12 |
| Anthracene | ug/L (ppb) | 5 | 84 | 98 | 65-117 | 15 |
| Fluoranthene | ug/L (ppb) | 5 | 94 | 101 | 68-121 | 7 |
| Pyrene | ug/L (ppb) | 5 | 110 | 117 | 66-125 | 6 |
| Benz(a)anthracene | ug/L (ppb) | 5 | 107 | 116 | 70-130 | 8 |
| Chrysene | ug/L (ppb) | 5 | 99 | 109 | 67-119 | 10 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 101 | 113 | 68-126 | 11 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 106 | 120 | 62-130 | 12 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 97 | 110 | 67-125 | 13 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 105 | 121 | 63-131 | 14 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 105 | 120 | 62-133 | 13 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 5 | 101 | 114 | 57-133 | 12 |

Date of Report: 11/23/22
Date Received: 11/03/22
Project: Kosmos, F&BI 211083

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| TSS | mg/L (ppm) | 50 | 80 | 90 | 35-146 | 11 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

211083

# SAMPLE CHAIN OF CUSTODY

11-03-22 VW4/A16/EO41

Page # 1 of 1

Report To Angie Goodwin

Company FOA

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: Cosmos

PO #

REMARKS: Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | Total Pb/Pb | Cr VI | TSS | EPH/TPH | cPAHs | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AN SW-1 | | 11/3/22 | 1100 | water | 13 | X | X | X | | | | | | | | | X | NO EDH/VPH |
| AN SW-2 | | | 1120 | | 12 | | | | | | | | | | | | X | PE AG |
| AN SW-3 | | | 1140 | | 13 | | | | | | | | | | | | X | 11/5/22 ME |
| MW-1D | 01 A-Q | | 1310 | | 15 | X | X | | | X | X | | X | X | X | X | | |
| MW-1DD | 02 A-Q | | 1330 | | 16 | X | X | | | X | X | | X | X | X | X | | |
| MW-2D | 03 A-Q | | 1510 | | 15 | X | X | | | X | X | | X | X | X | X | | |
| MW-3D | 04 A-Q | | 1510 | | 16 | X | X | | | X | X | | X | X | X | X | | |
| MW-4D | 05 A-Q | ↓ | 1345 | ↓ | 16 | X | X | | | X | X | | X | X | X | X | | |
| Trip Blank | 06 AB | – | | water | 2 | | | | | | | | | | | | | Added at lab (MP) 11/3/22 |
| | | | | | | | | | | | | | | | | | | |

ANALYSES REQUESTED

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Nakahara | HA | 11/3/22 | 1848 |
| Received by: | BISRAT TADESSE | FBI | 11/3/22 | 1848 |
| Relinquished by: | | | | |
| Received by: | | Samples received at 5 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

**RE: 211083**
**Work Order Number: 2211107**

November 09, 2022

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 5 sample(s) on 11/4/2022 for the analyses presented in the following report.

***Hexavalent Chromium by SM 3500 Cr B***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *11/09/2022*

**CLIENT:** Friedman & Bruya
**Project:** 211083
**Work Order:** 2211107

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2211107-001 | MW-1D | 11/03/2022 1:10 PM | 11/04/2022 8:55 AM |
| 2211107-002 | MW-1DD | 11/03/2022 1:30 PM | 11/04/2022 8:55 AM |
| 2211107-003 | MW-2D | 11/03/2022 3:10 PM | 11/04/2022 8:55 AM |
| 2211107-004 | MW-3D | 11/03/2022 3:10 PM | 11/04/2022 8:55 AM |
| 2211107-005 | MW-4D | 11/03/2022 1:45 PM | 11/04/2022 8:55 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2211107**
Date: **11/9/2022**

**CLIENT:** Friedman & Bruya
**Project:** 211083

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

**CLIENT:** Friedman & Bruya
**Project:** 211083

**Lab ID:** 2211107-001 **Collection Date:** 11/3/2022 1:10:00 PM
**Client Sample ID:** **MW-1D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79575 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 11/4/2022 11:02:00 AM |

**Lab ID:** 2211107-002 **Collection Date:** 11/3/2022 1:30:00 PM
**Client Sample ID:** **MW-1DD** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79575 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 11/4/2022 11:21:00 AM |

**Lab ID:** 2211107-003 **Collection Date:** 11/3/2022 3:10:00 PM
**Client Sample ID:** **MW-2D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79575 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 11/4/2022 11:26:00 AM |

**Lab ID:** 2211107-004 **Collection Date:** 11/3/2022 3:10:00 PM
**Client Sample ID:** **MW-3D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79575 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 11/4/2022 11:31:00 AM |

# Analytical Report

Work Order: **2211107**
Date Reported: **11/9/2022**

**CLIENT:** Friedman & Bruya
**Project:** 211083

**Lab ID:** 2211107-005
**Client Sample ID:** **MW-4D**
**Collection Date:** 11/3/2022 1:45:00 PM
**Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R79575 | | Analyst: CB |
| Chromium, Hexavalent | ND | 0.0450 | | mg/L | 1 | 11/4/2022 11:36:00 AM |

**Work Order:** 2211107
**CLIENT:** Friedman & Bruya
**Project:** 211083

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **MB-79575** | SampType: **MBLK** | Units: **mg/L** | Prep Date: **11/4/2022** | RunNo: **79575** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R79575** | | Analysis Date: **11/4/2022** | SeqNo: **1640471** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | ND | 0.0450 | | | | | | | | | |

| Sample ID: **LCS-79575** | SampType: **LCS** | Units: **mg/L** | Prep Date: **11/4/2022** | RunNo: **79575** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R79575** | | Analysis Date: **11/4/2022** | SeqNo: **1640472** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 0.261 | 0.0450 | 0.2500 | 0 | 104 | 82.2 | 115 | | | | |

| Sample ID: **2211107-001ADUP** | SampType: **DUP** | Units: **mg/L** | Prep Date: **11/4/2022** | RunNo: **79575** |
|---|---|---|---|---|
| Client ID: **MW-1D** | Batch ID: **R79575** | | Analysis Date: **11/4/2022** | SeqNo: **1640474** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | ND | 0.0450 | | | | | | 0 | | 20 | |

| Sample ID: **2211107-001AMS** | SampType: **MS** | Units: **mg/L** | Prep Date: **11/4/2022** | RunNo: **79575** |
|---|---|---|---|---|
| Client ID: **MW-1D** | Batch ID: **R79575** | | Analysis Date: **11/4/2022** | SeqNo: **1640475** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 0.266 | 0.0450 | 0.2500 | 0 | 106 | 59.4 | 125 | | | | |

| Sample ID: **2211107-001AMSD** | SampType: **MSD** | Units: **mg/L** | Prep Date: **11/4/2022** | RunNo: **79575** |
|---|---|---|---|---|
| Client ID: **MW-1D** | Batch ID: **R79575** | | Analysis Date: **11/4/2022** | SeqNo: **1640476** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 0.270 | 0.0450 | 0.2500 | 0 | 108 | 59.4 | 125 | 0.2656 | 1.64 | 20 | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | **FB** | Work Order Number: | **2211107** |
| Logged by: | **Elisabeth Samoray** | Date Received: | **11/4/2022 8:55:00 AM** |

## Chain of Custody

| | | | | |
|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | |

## Log In

| | | | | |
|---|---|---|---|---|
| 3. | Coolers are present? | Yes ☑ | No ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes ☑ | No ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes ☐ | No ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes ☑ | No ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 10. | Are samples properly preserved? | Yes ☑ | No ☐ | |
| 11. | Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes ☐ | No ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes ☑ | No ☐ | |
| 14. | Does paperwork match bottle labels? | Yes ☑ | No ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 16. | Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 17. | Were all holding times able to be met? | Yes ☑ | No ☐ | |

## Special Handling (if applicable)

| | | | | |
|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes ☐ | No ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

**Item Information**

| Item # | Temp ºC |
|---|---|
| Sample 1 | 1.4 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2211107

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO. 211083

PO # C-393

REMARKS

TURNAROUND TIME
- ☒ Standard TAT
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | cVOC | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1D | | 11/3/22 | 1310 | $H_2O$ | 2 | | | | ↓ | | | | | | |
| MW-1DD | | " | 1330 | " | " | | | | | | | | | | |
| MW-2D | | " | 1510 | " | " | | | | | | | | | | |
| MW-3D | | " | 1510 | " | " | | | | | | | | | | |
| MW-4D | | " | 1345 | " | ↓ | | | | ↓ | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 11/4/22 | 0727 |
| Received by: | Clare O'Connor | Clare O'Connor | FAI | 11/4/22 | 8:55 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

# Data Usability Summary Report

**Project Name: Kosmos Mill**

**Project Description: Groundwater Samples**

**Sample Date(s): 13 February 2023**

**Analytical Laboratory: Friedman & Bruya – Seattle, WA**

**Fremont Analytical – Seattle, WA**

**Onsite Environmental – Redmond, WA**

**Validation Performed by: Kirkland Broadwell**

**Validation Reviewed by: Katherine Miller**

**Validation Date: 09 March 2023**

---

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the analytical results for Sample Delivery Group (SDG) listed. This DUSR is organized into the following sections:

1. **Sample Delivery Group Number 302179**
2. **Explanations**
3. **Glossary**
4. **Abbreviations**
5. **Qualifiers**

**References**

This data validation and usability assessment was performed per the guidance and requirements established by the United States Environmental Protection Agency (USEPA) using the following reference materials:

- National Functional Guidelines (NFG) for Inorganic Data Review.
- National Functional Guidelines (NFG) for Organic Data Review.
- The project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section).

Data reported in this sampling event were reported to the laboratory reporting limit (RL).

Sample data were qualified in accordance with the laboratory's standard operating procedures (SOP). The results presented in each laboratory report were found to be compliant with the data quality objectives (DQO) for the project and therefore usable; any exceptions are noted in the following pages.

# 1. Sample Delivery Group Number 302179

## 1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 302179, dated 23 February 2023. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol.

- Samples for Volatile Petroleum Hydrocarbon (VPH) analysis were subcontracted to Onsite Environmental, Inc. – Redmond, WA (Laboratory IDs 02-171-01 through 02-171-09).
- Samples for EPH and hexavalent chromium analysis were subcontracted to Freemont Analytical – Seattle, WA (Laboratory IDs 2302235-001 through 2302235-001).

Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- Custody seals were not used when samples were transported between subcontracted laboratories.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| MW-1S-20230213 | N | 302179 -01 | 2/13/2023 | WG | A, B, C, D, E, F, G |
| MW-1D-20230213 | N | 302179 -02 | 2/13/2023 | WG | A, B, C, D, E, F, G |
| MW-1DD-20230213 | N | 302179 -03 | 2/13/2023 | WG | A, B, C, D, E, F, G |
| MW-2S-20230213 | N | 302179 -04 | 2/13/2023 | WG | A, B, C, D, E, F, G |
| MW-2D-20230213 | N | 302179 -05 | 2/13/2023 | WG | A, B, C, D, E, F, G |
| MW-3S-20230213 | N | 302179 -06 | 2/13/2023 | WG | A, B, C, D, E, F, G |
| MW-3D-20230213 | N | 302179 -07 | 2/13/2023 | WG | A, B, C, D, E, F, G |
| MW-4S-20230213 | N | 302179 -08 | 2/13/2023 | WG | A, B, C, D, E, F, G |
| MW-4D-20230213 | N | 302179 -09 | 2/13/2023 | WG | A, B, C, D, E, F, G |
| MW-1S-20230213 | N | 02-171-01 | 2/13/2023 | WG | H, I |
| MW-1D-20230213 | N | 02-171-02 | 2/13/2023 | WG | H, I |
| MW-1DD-20230213 | N | 02-171-03 | 2/13/2023 | WG | H, I |
| MW-2S-20230213 | N | 02-171-04 | 2/13/2023 | WG | H, I |
| MW-2D-20230213 | N | 02-171-05 | 2/13/2023 | WG | H, I |
| MW-3S-20230213 | N | 02-171-06 | 2/13/2023 | WG | H, I |
| MW-3D-20230213 | N | 02-171-07 | 2/13/2023 | WG | H, I |
| MW-4S-20230213 | N | 02-171-08 | 2/13/2023 | WG | H, I |
| MW-4D-20230213 | N | 02-171-09 | 2/13/2023 | WG | H, I |
| MW-1S-20230213 | N | 2302235-001 | 2/13/2023 | WG | J, K |
| MW-1D-20230213 | N | 2302235-002 | 2/13/2023 | WG | J, K |
| MW-1DD-20230213 | N | 2302235-003 | 2/13/2023 | WG | J, K |
| MW-2S-20230213 | N | 2302235-004 | 2/13/2023 | WG | J, K |
| MW-2D-20230213 | N | 2302235-005 | 2/13/2023 | WG | J, K |

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| MW-3S-20230213 | N | 2302235-006 | 2/13/2023 | WG | J, K |
| MW-3D-20230213 | N | 2302235-007 | 2/13/2023 | WG | J, K |
| MW-4S-20230213 | N | 2302235-008 | 2/13/2023 | WG | J, K |
| MW-4D-20230213 | N | 2302235-009 | 2/13/2023 | WG | J, K |

| Method Holding Times | | | |
|---|---|---|---|
| A. | NWTPH-DX | Total Petroleum Hydrocarbons (TPH) Total Diesel | 14 days for liquid, preserved; 7 days for liquid unpreserved |
| B. | NWTPH-GX | Total Petroleum Hydrocarbons (TPH) Total Gasoline | 14 days for liquid, preserved; 7 days for liquid unpreserved |
| C. | SW8260D | Volatile Organic Compounds (VOCs) | 14 days for liquid, preserved; 7 days for liquid unpreserved |
| D. | SW8270E | Polycyclic Aromatic Hydrocarbons (PAHs) | 7 days extraction / 40 days analysis for liquid |
| E. | SW6020B | Metals | 180 days for liquid |
| F. | E1631E | Mercury | 28 days preserved; 48 hours unpreserved |
| G. | SM2540D | Total Suspended Solids | 7 days |
| H. | NWTPH-VPH | VPH Fractions | 14 days preserved; 7 days unpreserved |
| I. | SW8021B | Volatile Organic Compounds (VOCs) | 14 days |
| J. | NWTPH-EPH | Extractable Petroleum Hydrocarbon (EPH) Fractions | 14 days preserved; 7 days unpreserved |
| K. | SM3500-CR B | Hexavalent Chromium | 24 hours |

## 1.2 CASE NARRATIVE

The laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since these additional quality control issues were not required for the project's data quality objectives, these quality control issues were not reviewed:

- SDG 320179: The calibration standard for acetone (SW8260D) was outside of acceptance criteria. The reported values are estimates and qualified UJ: 302179-01 through 302179-09.
- SDG 2302235: The calibration verification for Aromatic Hydrocarbons (C16-C21) and (C12-C34) for sample 2302235-006 and (C21-C34) for sample 2302235-007 are above the laboratory acceptance criteria. No qualification necessary.

## 1.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol with the following exceptions:

| Method | Matrix | Holding Time | Preservation | Sample ID, Violation, Qualification |
|---|---|---|---|---|
| SM3500-CR B | Water | 24 hours | Cool to ≤ 6 °C | The following samples were analyzed outside the holding time and qualified J/UJ: 2302235-001 through 2302235-009 |
| NWTPH-EPH | Water | 14 days | Cool to ≤ 6 °C | The following samples were analyzed outside the holding time and qualified J/UJ: MW-1D-20230213, MW-1DD-20230213, MW-1S-20230213, MW-2D-20230213, MW-2S-20230213, MW-3D-20230213, MW-3S-20230213, MW-4D-20230213, and MW-4S-20230213 |

### 1.4 REPORTING LIMITS AND SAMPLE DILUTIONS

The RLs for the samples within this SDG met or were below the minimum RL requirements specified by the project specific QAPP, except were diluted due to matrix effects or non-target analytes.

### 1.5 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified quality control (QC) limits, with the following exceptions:

| Method | Sample ID | Lab ID | Surrogate | Dilution | %R | Qualification |
|---|---|---|---|---|---|---|
| NWTPH-EPH | MW-3D-20230213 | 2302235-007 | 1-Chlorooctadecane | 1x | 33.8% | J-/UJ target compounds* |

**Compounds targeted by 1-Chlorooctadecane: all aliphatic compounds*

### 1.6 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses associated with client samples exhibited recoveries and relative percent differences (RPDs) within the specified limits with the following exceptions:

| Sample Type | Method | SDG # | Analyte | %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|---|---|
| LCSD | SW8270E | 302179 | 1-Methylnaphthalene | 94% | J/None | 302179-06 |

### 1.7 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The samples below were used for matrix spike/matrix spike duplicate (MS/MSD):

| Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 302179-01 | MW-1S-20230213 | SW6020B, E1631E, SW8260D |

| Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 2302235-003 | MW-1DD-20230213 | SM3500-CR B |
| 2302235-004 | MW-2S-20230213 | NWTPH-EPH |

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits.

### 1.8 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

### 1.9 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The following samples were used for laboratory duplicate analysis and the RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL):

| Lab Sample Number | Laboratory Duplicate Sample Client ID | Method |
|---|---|---|
| 2302235-003 | MW-1DD-20230213 | SM3500-CR B |
| 2302235-006 | MW-3S-20230213 | NWTPH-EPH |

The following sample was used for field duplicate analysis. RPDs were all below 35 (or the absolute difference rule was satisfied if detects were less than 5 times the RL). Any exceptions are noted below and qualified.

| Primary Sample ID | Duplicate Sample ID | Methods |
|---|---|---|
| MW-1D-20230213 | MW-1DD-20230213 | A, B, C, D, E, F, G, H, I, J, K |

**Field Duplicate RPD Calculations:**

| Method: SW6020B | | | | |
|---|---|---|---|---|
| Analyte (µg/L) | Primary Sample ID | Duplicate Sample ID | % RPD | Qualification |
| | MW-1D-20230213 | MW-1DD-20230213 | | |
| Barium, dissolved | 1.05 | 2.34 | 76% | J, RPD > 35% |
| Zinc, dissolved | ND U | 11.4 | NA | J/UJ, Abs. Diff. > RL |

### 1.10 PRECISION AND ACCURACY

Refer to section E 1.7. Where required by the method, some measurement of analytical accuracy and precision was reported for each method with the site samples.

### 1.11 CALCULATION ACCURACY

Total (non-filtered) metals were greater than dissolved (filtered) metals, and
Total chromium was greater than hexavalent chromium,
with the following exceptions:

| Sample ID | Analyte | Total (ug/L) | Dissolved (ug/L) | %RPD | Action |
|---|---|---|---|---|---|
| MW-1DD-20230213 | Barium | 2.16 | 2.34 | 8.00% | None, RPD < 100% |
| MW-1DD-20230213 | Zinc | ND | 11.4 | 78.0% | None, RPD < 100% |
| MW-1S-20230213 | Zinc | ND | 7.05 | 12.5% | None, RPD < 100% |
| MW-2S-20230213 | Nickel | ND | 1.2 | 12.4% | None, RPD < 100% |
| MW-2S-20230213 | Barium | 1 | 1.12 | 11.3% | None, RPD < 100% |
| MW-3S-20230213 | Nickel | 1.06 | 1.16 | 3.80% | None, RPD < 100% |
| MW-3S-20230213 | Barium | 1.55 | 1.61 | 3.80% | None, RPD < 100% |
| MW-3S-20230213 | Arsenic | 1.21 | 1.22 | 0.82% | None, RPD < 100% |

## 1.12 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable as no data was rejected. The qualifiers applied to this data set are summarized in the table below.

| Sample ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|
| MW-1D-20230213 | Acetone | 50 EJ | 50 UJ | Calibration exceedance |
| | Barium, Dissolved | 1.05 | 1.05 J | Field Duplicate calculations |
| | Zinc, Dissolved | U | UJ | |
| | Chromium VI (Hexavalent) | UH | UJ | Hold time exceedance |
| | EPH (C10-C12) Aliphatic | U | UJ | |
| | EPH (C10-C12) Aromatic | U | UJ | |
| | EPH (C12-C16) Aliphatic | U | UJ | |
| | EPH (C12-C16) Aromatic | U | UJ | |
| | EPH (C16-C21) Aliphatic | U | UJ | |
| | EPH (C16-C21) Aromatic | 18.2 J | 18.2 J | |

| Sample ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|
| | EPH (C21-C34) Aliphatic | U | UJ | |
| | EPH (C21-C34) Aromatic | U | UJ | |
| | EPH (C8-C10) Aliphatic | U | UJ | |
| | EPH (C8-C10) Aromatic | U | UJ | |
| MW-1DD-20230213 | Acetone | 50 EJ | 50 UJ | Calibration exceedance |
| | Barium, Dissolved | 2.34 | 2.34 J | Field Duplicate calculations |
| | Zinc, Dissolved | 11.4 | 11.4 J | |
| | Chromium VI (Hexavalent) | UH | UJ | Hold time exceedance |
| | EPH (C10-C12) Aromatic | U | UJ | |
| | EPH (C12-C16) Aromatic | U | UJ | |
| | EPH (C16-C21) Aromatic | U | UJ | |
| | EPH (C21-C34) Aromatic | U | UJ | |
| | EPH (C8-C10) Aromatic | 32.2 J | 32.2 J | |
| MW-1S-20230213 | Acetone | 50 EJ | 50 UJ | Calibration exceedance |
| MW-1S-20230213 | Chromium VI (Hexavalent) | UH | UJ | Hold time exceedance |
| | EPH (C10-C12) Aromatic | U | UJ | |
| | EPH (C12-C16) Aromatic | U | UJ | |
| | EPH (C16-C21) Aromatic | U | UJ | |
| | EPH (C21-C34) Aromatic | U | UJ | |
| | EPH (C8-C10) Aromatic | U | UJ | |
| MW-2D-20230213 | Acetone | 50 EJ | 50 UJ | Calibration exceedance |
| | Chromium VI (Hexavalent) | UH | UJ | Hold time exceedance |
| | EPH (C10-C12) Aromatic | U | UJ | |
| | EPH (C12-C16) Aromatic | U | UJ | |
| | EPH (C16-C21) Aromatic | U | UJ | |
| | EPH (C21-C34) Aromatic | 35.8 J | 35.8 J | |
| | EPH (C8-C10) Aromatic | U | UJ | |

| Sample ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|
| MW-2S-20230213 | Acetone | 50 EJ | 50 UJ | Calibration exceedance |
| | Chromium VI (Hexavalent) | UH | UJ | Hold time exceedance |
| | EPH (C10-C12) Aromatic | U | UJ | |
| | EPH (C12-C16) Aromatic | 20.2 J | 20.2 J | |
| | EPH (C16-C21) Aromatic | U | UJ | |
| | EPH (C21-C34) Aromatic | U | UJ | |
| | EPH (C8-C10) Aromatic | U | UJ | |
| MW-3D-20230213 | Acetone | 50 EJ | 50 UJ | Calibration exceedance |
| | EPH (C21-C34) Aromatic | 46.4 Q | 46.4 J | Hold time exceedance |
| | Chromium VI (Hexavalent) | UH | UJ | Hold time exceedance |
| | EPH (C10-C12) Aromatic | U | UJ | |
| | EPH (C12-C16) Aromatic | U | UJ | |
| | EPH (C16-C21) Aromatic | U | UJ | |
| MW-3D-20230213 | EPH (C8-C10) Aromatic | U | UJ | Hold time exceedance |
| | EPH (C10-C12) Aliphatic | U | UJ | Surrogate recovery low |
| | EPH (C12-C16) Aliphatic | U | UJ | |
| | EPH (C16-C21) Aliphatic | U | UJ | |
| | EPH (C21-C34) Aliphatic | U | UJ | |
| | EPH (C8-C10) Aliphatic | U | UJ | |
| MW-3S-20230213 | Acetone | 50 EJ | 50 UJ | Calibration exceedance |
| | EPH (C16-C21) Aromatic | 81.8 Q | 81.8 J | Hold time exceedance |
| | EPH (C21-C34) Aromatic | 44.3 Q | 44.3 J | |
| | Chromium VI (Hexavalent) | UH | UJ | Hold time exceedance |
| | EPH (C10-C12) Aromatic | 37.6 J | 37.6 J | |
| | EPH (C12-C16) Aromatic | 110 | 110 J | |
| | EPH (C8-C10) Aromatic | U | UJ | |

| Sample ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|
| | 1-Methylnaphthalene | 6.4 T | 6.4 J | LCS % recovery high |
| MW-4D-20230213 | Acetone | 50 EJ | 50 UJ | Calibration exceedance |
| | Chromium VI (Hexavalent) | UH | UJ | Hold time exceedance |
| | EPH (C10-C12) Aromatic | U | UJ | |
| | EPH (C12-C16) Aromatic | U | UJ | |
| | EPH (C16-C21) Aromatic | U | UJ | |
| | EPH (C21-C34) Aromatic | U | UJ | |
| | EPH (C8-C10) Aromatic | U | UJ | |
| MW-4S-20230213 | Acetone | 50 EJ | 50 UJ | Calibration exceedance |
| | Chromium VI (Hexavalent) | UH | UJ | Hold time exceedance |
| | EPH (C10-C12) Aromatic | U | UJ | |
| | EPH (C12-C16) Aromatic | U | UJ | |
| | EPH (C16-C21) Aromatic | U | UJ | |
| MW-4S-20230213 | EPH (C21-C34) Aromatic | 37.2 J | 37.2 J | Hold time exceedance |
| | EPH (C8-C10) Aromatic | 35.6 J | 35.6 J | |

## 2. Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.2 Surrogate Recovery Compliance
  - Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to sample preparation to determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds.
- E 1.3 Laboratory Control Samples
  - The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
- E 1.6 Laboratory Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
  - The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The relative percent difference (RPD) or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the relative percent difference (RPD) found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.
  - Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the percent recovery (%R) of certain spiked compounds. This can be assessed using LCS, blank spike (BS), MS, and/or surrogate recoveries.

# 3. Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg microgram per kilogram
  - µg/L microgram per liter
  - µg/$m^3$ microgram per cubic meter
  - mg/kg milligram per kilogram
  - mg/L milligram per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - WQ Water Quality control matrix
  - WS Surface Water
- Table Footnotes:
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Common Symbols:
  - % percent
  - < less than
  - ≤ less than or equal to
  - > greater than
  - ≥ greater than or equal to
  - = equal
  - °C degrees Celsius
  - ± plus or minus
  - ~ approximately
  - x times (multiplier)

# 4. Abbreviations

| | |
|---|---|
| %D | Percent Difference |
| %R | Percent Recovery |
| %RSD | Percent Relative Standard Deviation |
| %v/v | Percent volume by volume |
| µg/L | micrograms per liter |
| 2s | 2 sigma |
| 4,4-DDT | 4 4-dichlorodiphenyltrichloroethane |
| Abs Diff | Absolute Difference |
| amu | atomic mass unit |
| BPJ | Best Professional Judgement |
| BS | Blank Spike |
| CCB | Continuing Calibration Blank |
| CCV | Continuing Calibration Verification |
| CCVL | Continuing Calibration Verification Low |
| COC | Chain of Custody |
| COM | Combined Isotope Calculation |
| Cr (VI) | Hexavalent Chromium |
| CRI | Collision Reaction Interface |
| DoD | Department of Defense |
| DQO | data quality objective |
| DUSR | Data Usability Summary Report |
| EMPC | Estimated Maximum Possible Concentration |
| FBK | Field Blank Contamination |
| FDP | Field Duplicate |
| GC | Gas Chromatograph |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| GPC | Gel Permeation Chromatography |
| H2 | Hydrogen gas |
| HCl | Hydrochloric Acid |
| ICAL | Initial Calibration |
| ICB | Initial Calibration Blank |
| ICP/MS | Inductively Coupled Plasma/ Mass Spectrometry |
| ICV | Initial Calibration Verification |
| ICVL | Initial Calibration Verification Low |
| IPA | Isopropyl Alcohol |
| LC | Laboratory Control |
| LCS/LCSD | Laboratory Control Sample/Laboratory Control Sample Duplicate |
| MBK | Method Blank Contamination |
| MDC | Minimum Detectable Concentration |
| MDL | Laboratory Method Detection Limit |
| mg/kg | milligrams per kilogram |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | not applicable |
| ND | Non-Detect |
| NFG | National Functional Guidelines |
| $NH_3$ | Ammonia |
| NYSDEC | New York State Department of Environmental Conservation |
| PAH | polycyclic aromatic hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PDS | Post Digestion Spike |
| PEM | Performance Evaluation Mixture |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFBA | Perfluorbutanoic Acid |
| PFD | Perfluorodecalin |
| PFOA | Perfluorooctanoic Acid |
| PFOS | Perfluorooctane sulfonate |
| PFPeA | Perfluoropentanoic Acid |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QSM | Quality Systems Manual |
| $R^2$ | R-squared value |
| Ra-226 | Radium-226 |
| Ra-228 | Radium-228 |
| RESC | Resolution Check Measure |
| RL | Laboratory Reporting Limit |
| RPD | Relative Percent Difference |
| RRF | Relative Response Factors |
| RT | Retention Time |
| SAP | sampling analysis plan |
| SDG | Sample Delivery Group |
| SIM | Selected ion monitoring |
| SOP | Laboratory Standard Operating Procedures |
| SPE | Solid Phase Extraction |
| SVOC | Semi-Volatile Organic Compounds |
| TIC | Tentatively Identified Compound |
| TKN | Total Kjeldahl Nitrogen |
| TPH | Total Petroleum Hydrocarbon |
| TPU | Total Propagated Uncertainty |
| amu | atomic mass unit |
| USEPA | U.S. Environmental Protection Agency |
| VOC | Volatile Organic Compounds |
| WP | Work Plan |

# 5. Qualifiers

The qualifiers below are from the USEPA National Functional Guidelines and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:

  U The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".

  B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers:

  E The compound was quantitated above the calibration range.

  D The concentration is based on a diluted sample analysis.

- Validation Qualifiers:

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  J/UJ as listed in exception tables J applies to detected data and UJ applies to non-detected data as reported by the laboratory.

  UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

  NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.

  R The sample results were rejected as unusable; the compound may or may not be present in the sample.

  S Result is suspect. See DUSR for details.

## References


1. Haley & Aldrich, Inc, 2021. Quality Assurance Project Plan. Remedial Investigation Work Plan. Kosmos Mill Oil Cleanup. Site Code: 19499-02. Seattle Washington. December 2021.
2. United States Environmental Protection Agency (USEPA), 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January 2017.
3. USEPA, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January 2017.

FRIEDMAN & BRUYA, INC.

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March 6, 2023

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on February 14, 2023 from the Kosmos, F&BI 302179 project. There are 65 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data, Andrew Nakahara
HNA0306R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 14, 2023 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos, F&BI 302179 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 302179 -01 | MW-1S |
| 302179 -02 | MW-1D |
| 302179 -03 | MW-1DD |
| 302179 -04 | MW-2S |
| 302179 -05 | MW-2D |
| 302179 -06 | MW-3S |
| 302179 -07 | MW-3D |
| 302179 -08 | MW-4S |
| 302179 -09 | MW-4D |

The samples were sent to Fremont Analytical for EPH and hexavalent chromium analyses. In addition, the samples were sent to Onsite for VPH analysis. The reports are enclosed.

The 8260D calibration standard failed the acceptance criteria for acetone. The data were flagged accordingly.

1-Methylnaphthalene in the 8270E laboratory control sample duplicate failed the acceptance criteria. The compound was not detected, therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179
Date Extracted: 02/14/23
Date Analyzed: 02/15/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| MW-1S<br>302179-01 | <100 | 103 |
| MW-1D<br>302179-02 | <100 | 99 |
| MW-1DD<br>302179-03 | <100 | 100 |
| MW-2S<br>302179-04 | <100 | 100 |
| MW-2D<br>302179-05 | <100 | 104 |
| MW-3S<br>302179-06 | 430 | 106 |
| MW-3D<br>302179-07 | <100 | 101 |
| MW-4S<br>302179-08 | <100 | 100 |
| MW-4D<br>302179-09 | <100 | 104 |
| Method Blank<br>03-233 MB | <100 | 103 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179
Date Extracted: 02/14/23
Date Analyzed: 02/14/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL10 AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|---|
| MW-1S<br>302179-01 | 840 x | 800 x | 121 |
| MW-1D<br>302179-02 | <50 | <250 | 109 |
| MW-1DD<br>302179-03 | <50 | <250 | 119 |
| MW-2S<br>302179-04 | 2,700 x | 1,100 x | 124 |
| MW-2D<br>302179-05 | <50 | <250 | 114 |
| MW-3S<br>302179-06 | 2,900 x | 1,200 x | 128 |
| MW-3D<br>302179-07 | <50 | <250 | 114 |
| MW-4S<br>302179-08 | 290 x | <250 | 119 |
| MW-4D<br>302179-09 | <50 | <250 | 109 |
| Method Blank<br>03-409 MB2 | <50 | <250 | 117 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-01 |
| Date Analyzed: | 02/14/23 | Data File: | 302179-01.136 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Barium | 2.08 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.52 |
| Silver | <1 |
| Zinc | 7.05 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-01 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-01.118 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Selenium | <1 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-02 |
| Date Analyzed: | 02/14/23 | Data File: | 302179-02.139 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Barium | 1.05 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-02 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-02.119 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Selenium | <1 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-03 |
| Date Analyzed: | 02/14/23 | Data File: | 302179-03.147 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Barium | 2.34 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Silver | <1 |
| Zinc | 11.4 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-03 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-03.120 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Selenium | <1 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-04 |
| Date Analyzed: | 02/14/23 | Data File: | 302179-04.148 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Barium | 1.12 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.20 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-04 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-04.121 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 3.30 |
| Selenium | <1 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-05 |
| Date Analyzed: | 02/14/23 | Data File: | 302179-05.149 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-05 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-05.122 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Selenium | <1 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-06 |
| Date Analyzed: | 02/14/23 | Data File: | 302179-06.150 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Barium | 1.61 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.16 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-06 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-06.123 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 1.22 |
| Selenium | <1 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-07 |
| Date Analyzed: | 02/14/23 | Data File: | 302179-07.151 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-07 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-07.124 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Selenium | <1 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-08 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-08.172 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 3.67 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.32 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-09 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-09.173 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | I3-102 mb |
| Date Analyzed: | 02/14/23 | Data File: | I3-102 mb.119 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-01 |
| Date Analyzed: | 02/14/23 | Data File: | 302179-01.158 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Barium | 2.24 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | 5.53 |
| Lead | <1 |
| Nickel | 1.52 |
| Silver | <1 |
| Zinc | 6.22 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-01 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-01.174 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Selenium | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-02 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-02.175 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 3.54 |
| Cadmium | <1 |
| Chromium | 1.41 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-03 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-03.176 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 2.16 |
| Cadmium | <1 |
| Chromium | 1.61 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-04 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-04.177 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 3.44 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.06 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-05 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-05.178 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 3.06 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-06 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-06.179 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 1.21 |
| Barium | 1.55 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.06 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-07 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-07.185 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 4.26 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-08 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-08.186 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 3.87 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.33 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | 302179-09 |
| Date Analyzed: | 02/15/23 | Data File: | 302179-09.187 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 8.83 |
| Cadmium | <1 |
| Chromium | 1.62 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.39 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/14/23 | Lab ID: | I3-105 mb |
| Date Analyzed: | 02/14/23 | Data File: | I3-105 mb.121 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179
Date Extracted: 02/14/23
Date Analyzed: 02/15/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Dissolved Mercury |
|---|---|
| MW-1S<br>302179-01 | <0.01 |
| MW-1D<br>302179-02 | <0.01 |
| MW-1DD<br>302179-03 | <0.01 |
| MW-2S<br>302179-04 | <0.01 |
| MW-2D<br>302179-05 | <0.01 |
| MW-3S<br>302179-06 | <0.01 |
| MW-3D<br>302179-07 | <0.01 |
| MW-4S<br>302179-08 | <0.01 |
| MW-4D<br>302179-09 | <0.01 |
| Method Blank<br>I3-103 MB | <0.01 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179
Date Extracted: 02/14/23
Date Analyzed: 02/15/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES**
**FOR TOTAL MERCURY**
**USING EPA METHOD 1631E**
Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| MW-1S<br>302179-01 | <0.01 |
| MW-1D<br>302179-02 | <0.01 |
| MW-1DD<br>302179-03 | <0.01 |
| MW-2S<br>302179-04 | <0.01 |
| MW-2D<br>302179-05 | <0.01 |
| MW-3S<br>302179-06 | <0.01 |
| MW-3D<br>302179-07 | <0.01 |
| MW-4S<br>302179-08 | <0.01 |
| MW-4D<br>302179-09 | <0.01 |
| Method Blank<br>I3-103 MB | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-01 |
| Date Analyzed: | 02/15/23 | Data File: | 021536.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 78 | 126 |
| Toluene-d8 | 103 | 84 | 115 |
| 4-Bromofluorobenzene | 98 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 ca | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-02 |
| Date Analyzed: | 02/15/23 | Data File: | 021537.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 106 | 78 | 126 |
| Toluene-d8 | 102 | 84 | 115 |
| 4-Bromofluorobenzene | 94 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 ca | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-03 |
| Date Analyzed: | 02/15/23 | Data File: | 021538.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 78 | 126 |
| Toluene-d8 | 105 | 84 | 115 |
| 4-Bromofluorobenzene | 91 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 ca | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-04 |
| Date Analyzed: | 02/15/23 | Data File: | 021539.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 78 | 126 |
| Toluene-d8 | 101 | 84 | 115 |
| 4-Bromofluorobenzene | 96 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 ca | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-05 |
| Date Analyzed: | 02/15/23 | Data File: | 021540.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | 78 | 126 |
| Toluene-d8 | 99 | 84 | 115 |
| 4-Bromofluorobenzene | 99 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 ca | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-06 |
| Date Analyzed: | 02/15/23 | Data File: | 021541.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | 78 | 126 |
| Toluene-d8 | 102 | 84 | 115 |
| 4-Bromofluorobenzene | 100 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 ca | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | 2.6 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | 3.2 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | 6.6 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | 2.7 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | 2.2 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-07 |
| Date Analyzed: | 02/15/23 | Data File: | 021542.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 78 | 126 |
| Toluene-d8 | 97 | 84 | 115 |
| 4-Bromofluorobenzene | 89 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 ca | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-08 |
| Date Analyzed: | 02/15/23 | Data File: | 021543.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | 78 | 126 |
| Toluene-d8 | 102 | 84 | 115 |
| 4-Bromofluorobenzene | 93 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 ca | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-09 |
| Date Analyzed: | 02/15/23 | Data File: | 021544.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 106 | 78 | 126 |
| Toluene-d8 | 102 | 84 | 115 |
| 4-Bromofluorobenzene | 94 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 ca | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 03-0330 mb |
| Date Analyzed: | 02/15/23 | Data File: | 021523.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 109 | 78 | 126 |
| Toluene-d8 | 102 | 84 | 115 |
| 4-Bromofluorobenzene | 98 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 ca | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-01 |
| Date Analyzed: | 02/16/23 | Data File: | 021533.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 80 | 11 | 173 |
| 2-Fluorobiphenyl | 85 | 44 | 108 |
| 2,4,6-Tribromophenol | 113 | 10 | 140 |
| Terphenyl-d14 | 112 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-02 |
| Date Analyzed: | 02/16/23 | Data File: | 021534.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 87 | 11 | 173 |
| 2-Fluorobiphenyl | 90 | 44 | 108 |
| 2,4,6-Tribromophenol | 90 | 10 | 140 |
| Terphenyl-d14 | 103 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-03 |
| Date Analyzed: | 02/16/23 | Data File: | 021535.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 87 | 11 | 173 |
| 2-Fluorobiphenyl | 87 | 44 | 108 |
| 2,4,6-Tribromophenol | 81 | 10 | 140 |
| Terphenyl-d14 | 101 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-04 |
| Date Analyzed: | 02/16/23 | Data File: | 021536.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 77 | 11 | 173 |
| 2-Fluorobiphenyl | 84 | 44 | 108 |
| 2,4,6-Tribromophenol | 117 | 10 | 140 |
| Terphenyl-d14 | 100 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | 0.055 |
| Fluorene | 0.035 |
| Phenanthrene | <0.02 |
| Anthracene | 0.023 |
| Fluoranthene | <0.02 |
| Pyrene | 0.067 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-05 |
| Date Analyzed: | 02/16/23 | Data File: | 021537.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 90 | 11 | 173 |
| 2-Fluorobiphenyl | 92 | 44 | 108 |
| 2,4,6-Tribromophenol | 95 | 10 | 140 |
| Terphenyl-d14 | 104 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-06 |
| Date Analyzed: | 02/16/23 | Data File: | 021538.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 93 | 11 | 173 |
| 2-Fluorobiphenyl | 87 | 44 | 108 |
| 2,4,6-Tribromophenol | 122 | 10 | 140 |
| Terphenyl-d14 | 102 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | 0.66 |
| 1-Methylnaphthalene | 6.4 jl |
| Acenaphthylene | <0.02 |
| Acenaphthene | 0.86 |
| Fluorene | 2.0 |
| Phenanthrene | 0.94 |
| Anthracene | 0.13 |
| Fluoranthene | 0.027 |
| Pyrene | 0.049 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-07 |
| Date Analyzed: | 02/16/23 | Data File: | 021539.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 90 | 11 | 173 |
| 2-Fluorobiphenyl | 94 | 44 | 108 |
| 2,4,6-Tribromophenol | 97 | 10 | 140 |
| Terphenyl-d14 | 105 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-08 |
| Date Analyzed: | 02/16/23 | Data File: | 021540.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 67 | 11 | 173 |
| 2-Fluorobiphenyl | 80 | 44 | 108 |
| 2,4,6-Tribromophenol | 117 | 10 | 140 |
| Terphenyl-d14 | 105 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 02/14/23 | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 302179-09 |
| Date Analyzed: | 02/16/23 | Data File: | 021541.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 75 | 11 | 173 |
| 2-Fluorobiphenyl | 78 | 44 | 108 |
| 2,4,6-Tribromophenol | 93 | 10 | 140 |
| Terphenyl-d14 | 106 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos, F&BI 302179 |
| Date Extracted: | 02/15/23 | Lab ID: | 03-425 mb |
| Date Analyzed: | 02/16/23 | Data File: | 021531.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 82 | 11 | 173 |
| 2-Fluorobiphenyl | 90 | 44 | 108 |
| 2,4,6-Tribromophenol | 71 | 10 | 140 |
| Terphenyl-d14 | 106 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179
Date Extracted: 02/16/23
Date Analyzed: 02/17/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| MW-1S<br>302179-01 | <5 |
| MW-1D<br>302179-02 | 6.0 |
| MW-1DD<br>302179-03 | 5.2 |
| MW-2S<br>302179-04 | 28 |
| MW-2D<br>302179-05 | 30 |
| MW-3S<br>302179-06 | 16 |
| MW-3D<br>302179-07 | 20 |
| MW-4S<br>302179-08 | <5 |
| MW-4D<br>302179-09 | 40 |
| Method Blank<br>03-432 MB | <5 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 302175-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 91 | 70-130 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 108 | 120 | 70-130 | 11 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 302179-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 88 | 84 | 75-125 | 5 |
| Barium | ug/L (ppb) | 50 | 2.08 | 103 | 99 | 75-125 | 4 |
| Cadmium | ug/L (ppb) | 5 | <1 | 100 | 96 | 75-125 | 4 |
| Chromium | ug/L (ppb) | 20 | <1 | 98 | 96 | 75-125 | 2 |
| Copper | ug/L (ppb) | 20 | <5 | 98 | 93 | 75-125 | 5 |
| Lead | ug/L (ppb) | 10 | <1 | 95 | 90 | 75-125 | 5 |
| Nickel | ug/L (ppb) | 20 | 1.52 | 98 | 93 | 75-125 | 5 |
| Selenium | ug/L (ppb) | 5 | <1 | 93 | 85 | 75-125 | 9 |
| Silver | ug/L (ppb) | 5 | <1 | 93 | 88 | 75-125 | 6 |
| Zinc | ug/L (ppb) | 50 | 7.05 | 95 | 91 | 75-125 | 4 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 94 | 80-120 |
| Barium | ug/L (ppb) | 50 | 94 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 94 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 97 | 80-120 |
| Copper | ug/L (ppb) | 20 | 100 | 80-120 |
| Lead | ug/L (ppb) | 10 | 98 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 101 | 80-120 |
| Silver | ug/L (ppb) | 5 | 92 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 302187-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 81 | 81 | 75-125 | 0 |
| Barium | ug/L (ppb) | 50 | 22.4 | 105 | 106 | 75-125 | 1 |
| Cadmium | ug/L (ppb) | 5 | <1 | 99 | 99 | 75-125 | 0 |
| Chromium | ug/L (ppb) | 20 | 1.04 | 92 | 92 | 75-125 | 0 |
| Copper | ug/L (ppb) | 20 | <5 | 97 | 95 | 75-125 | 2 |
| Lead | ug/L (ppb) | 10 | 2.99 | 95 | 92 | 75-125 | 3 |
| Nickel | ug/L (ppb) | 20 | 1.58 | 94 | 93 | 75-125 | 1 |
| Selenium | ug/L (ppb) | 5 | <1 | 86 | 84 | 75-125 | 2 |
| Silver | ug/L (ppb) | 5 | <1 | 97 | 96 | 75-125 | 1 |
| Zinc | ug/L (ppb) | 50 | 2,360 | 188 b | 172 b | 75-125 | 9 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 92 | 80-120 |
| Barium | ug/L (ppb) | 50 | 93 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 93 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 95 | 80-120 |
| Copper | ug/L (ppb) | 20 | 97 | 80-120 |
| Lead | ug/L (ppb) | 10 | 103 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 97 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 101 | 80-120 |
| Silver | ug/L (ppb) | 5 | 92 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 94 | 80-120 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL AND DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 302179-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.01 | 107 | 105 | 71-125 | 2 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 95 | 68-125 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL AND DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 302179-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.01 | 107 | 105 | 71-125 | 2 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 95 | 68-125 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 302179-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| Chloromethane | ug/L (ppb) | 10 | <10 | 89 | 50-150 |
| Vinyl chloride | ug/L (ppb) | 10 | <0.02 | 97 | 50-150 |
| Bromomethane | ug/L (ppb) | 10 | <5 | 100 | 50-150 |
| Chloroethane | ug/L (ppb) | 10 | <1 | 97 | 50-150 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| Acetone | ug/L (ppb) | 50 | <50 | 62 | 50-150 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Hexane | ug/L (ppb) | 10 | <5 | 105 | 50-150 |
| Methylene chloride | ug/L (ppb) | 10 | <5 | 98 | 50-150 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| Chloroform | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | <20 | 80 | 50-150 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | <0.2 | 103 | 50-150 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| Carbon tetrachloride | ug/L (ppb) | 10 | <0.5 | 103 | 50-150 |
| Benzene | ug/L (ppb) | 10 | <0.35 | 98 | 50-150 |
| Trichloroethene | ug/L (ppb) | 10 | <0.5 | 99 | 50-150 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| Bromodichloromethane | ug/L (ppb) | 10 | <0.5 | 105 | 50-150 |
| Dibromomethane | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | <10 | 106 | 50-150 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 102 | 50-150 |
| Toluene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 105 | 50-150 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | <0.5 | 101 | 50-150 |
| 2-Hexanone | ug/L (ppb) | 50 | <10 | 99 | 50-150 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| Tetrachloroethene | ug/L (ppb) | 10 | <1 | 115 | 50-150 |
| Dibromochloromethane | ug/L (ppb) | 10 | <0.5 | 109 | 50-150 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | <1 | 110 | 50-150 |
| Chlorobenzene | ug/L (ppb) | 10 | <1 | 110 | 50-150 |
| Ethylbenzene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| m,p-Xylene | ug/L (ppb) | 20 | <2 | 102 | 50-150 |
| o-Xylene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| Styrene | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| Isopropylbenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| Bromoform | ug/L (ppb) | 10 | <5 | 113 | 50-150 |
| n-Propylbenzene | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| Bromobenzene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | <0.2 | 93 | 50-150 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | <1 | 91 | 50-150 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | <1 | 91 | 50-150 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| tert-Butylbenzene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 97 | 50-150 |
| sec-Butylbenzene | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 104 | 50-150 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | <10 | 91 | 50-150 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | <0.5 | 108 | 50-150 |
| Naphthalene | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 99 | 50-150 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | 92 | 105 | 46-206 | 13 |
| Chloromethane | ug/L (ppb) | 10 | 83 | 89 | 70-142 | 7 |
| Vinyl chloride | ug/L (ppb) | 10 | 93 | 101 | 70-130 | 8 |
| Bromomethane | ug/L (ppb) | 10 | 94 | 105 | 56-197 | 11 |
| Chloroethane | ug/L (ppb) | 10 | 97 | 102 | 70-130 | 5 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | 108 | 113 | 70-130 | 5 |
| Acetone | ug/L (ppb) | 50 | 67 | 68 | 10-140 | 1 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | 101 | 104 | 70-130 | 3 |
| Hexane | ug/L (ppb) | 10 | 87 | 103 | 54-136 | 17 |
| Methylene chloride | ug/L (ppb) | 10 | 97 | 91 | 43-134 | 6 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | 99 | 103 | 70-130 | 4 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | 102 | 106 | 70-130 | 4 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | 98 | 102 | 70-130 | 4 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | 84 | 100 | 70-130 | 17 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | 99 | 101 | 70-130 | 2 |
| Chloroform | ug/L (ppb) | 10 | 98 | 100 | 70-130 | 2 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 79 | 79 | 17-154 | 0 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | 102 | 105 | 70-130 | 3 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | 104 | 109 | 70-130 | 5 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | 92 | 95 | 70-130 | 3 |
| Carbon tetrachloride | ug/L (ppb) | 10 | 103 | 105 | 70-130 | 2 |
| Benzene | ug/L (ppb) | 10 | 97 | 100 | 70-130 | 3 |
| Trichloroethene | ug/L (ppb) | 10 | 97 | 100 | 70-130 | 3 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | 90 | 96 | 70-130 | 6 |
| Bromodichloromethane | ug/L (ppb) | 10 | 101 | 107 | 70-130 | 6 |
| Dibromomethane | ug/L (ppb) | 10 | 101 | 109 | 70-130 | 8 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 104 | 106 | 68-130 | 2 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | 96 | 102 | 69-131 | 6 |
| Toluene | ug/L (ppb) | 10 | 98 | 97 | 70-130 | 1 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | 93 | 95 | 70-130 | 2 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | 96 | 94 | 70-130 | 2 |
| 2-Hexanone | ug/L (ppb) | 50 | 91 | 91 | 45-138 | 0 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | 98 | 95 | 70-130 | 3 |
| Tetrachloroethene | ug/L (ppb) | 10 | 107 | 108 | 70-130 | 1 |
| Dibromochloromethane | ug/L (ppb) | 10 | 101 | 100 | 60-148 | 1 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | 105 | 103 | 70-130 | 2 |
| Chlorobenzene | ug/L (ppb) | 10 | 105 | 98 | 70-130 | 7 |
| Ethylbenzene | ug/L (ppb) | 10 | 95 | 95 | 70-130 | 0 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | 104 | 99 | 70-130 | 5 |
| m,p-Xylene | ug/L (ppb) | 20 | 97 | 96 | 70-130 | 1 |
| o-Xylene | ug/L (ppb) | 10 | 99 | 97 | 70-130 | 2 |
| Styrene | ug/L (ppb) | 10 | 94 | 97 | 70-130 | 3 |
| Isopropylbenzene | ug/L (ppb) | 10 | 103 | 101 | 70-130 | 2 |
| Bromoform | ug/L (ppb) | 10 | 105 | 105 | 69-138 | 0 |
| n-Propylbenzene | ug/L (ppb) | 10 | 94 | 97 | 70-130 | 3 |
| Bromobenzene | ug/L (ppb) | 10 | 103 | 101 | 70-130 | 2 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | 95 | 94 | 70-130 | 1 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | 96 | 95 | 70-130 | 1 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | 93 | 92 | 70-130 | 1 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | 95 | 92 | 70-130 | 3 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | 93 | 94 | 70-130 | 1 |
| tert-Butylbenzene | ug/L (ppb) | 10 | 103 | 99 | 70-130 | 4 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | 98 | 97 | 70-130 | 1 |
| sec-Butylbenzene | ug/L (ppb) | 10 | 99 | 98 | 70-130 | 1 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | 102 | 102 | 70-130 | 0 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | 104 | 101 | 70-130 | 3 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | 104 | 104 | 70-130 | 0 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | 106 | 104 | 70-130 | 2 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | 91 | 92 | 70-130 | 1 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | 103 | 105 | 70-130 | 2 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | 100 | 106 | 70-130 | 6 |
| Naphthalene | ug/L (ppb) | 10 | 100 | 96 | 70-130 | 4 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | 103 | 99 | 70-130 | 4 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 5 | 78 | 87 | 62-97 | 11 |
| 2-Methylnaphthalene | ug/L (ppb) | 5 | 80 | 91 | 64-101 | 13 |
| 1-Methylnaphthalene | ug/L (ppb) | 5 | 82 | 94 vo | 64-93 | 14 |
| Acenaphthylene | ug/L (ppb) | 5 | 94 | 103 | 70-130 | 9 |
| Acenaphthene | ug/L (ppb) | 5 | 86 | 94 | 70-130 | 9 |
| Fluorene | ug/L (ppb) | 5 | 93 | 101 | 70-130 | 8 |
| Phenanthrene | ug/L (ppb) | 5 | 93 | 100 | 70-130 | 7 |
| Anthracene | ug/L (ppb) | 5 | 93 | 102 | 70-130 | 9 |
| Fluoranthene | ug/L (ppb) | 5 | 101 | 105 | 70-130 | 4 |
| Pyrene | ug/L (ppb) | 5 | 96 | 102 | 70-130 | 6 |
| Benz(a)anthracene | ug/L (ppb) | 5 | 101 | 104 | 70-130 | 3 |
| Chrysene | ug/L (ppb) | 5 | 98 | 102 | 70-130 | 4 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 94 | 100 | 70-130 | 6 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 98 | 101 | 70-130 | 3 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 92 | 101 | 70-130 | 9 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 95 | 98 | 70-130 | 3 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 89 | 94 | 70-130 | 5 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 5 | 88 | 91 | 70-130 | 3 |

Date of Report: 03/06/23
Date Received: 02/14/23
Project: Kosmos, F&BI 302179

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| TSS | mg/L (ppm) | 20 | 96 | 92 | 35-146 | 4 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased high; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

302179

# SAMPLE CHAIN OF CUSTODY

02/14/23 K5/VW5/F4

Page # 1 of

Report To Angie Goalwin

Company H&A

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: Kosmos

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | Tot/Dissolved | EPH/VPH | TSS | Cr-VI | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1S | 01 A-Q | 2/13/23 | 1120 | H2O | 17 | X | X | | | X | X | | X | X | X | X | As, Ba, Cd, Cr, |
| MW-1DR | 02 | | 1120 | | | X | X | | | X | X | | X | X | X | X | Cu, Pb, Hg, Ni, |
| MW-1DD | 03 | | 1200 | | | X | X | | | X | X | | X | X | X | X | Se, Ag, Zn |
| MW-2S | 04 | | 1325 | | | X | X | | | X | X | | X | X | X | X | |
| MW-2D | 05 | | 1335 | | | X | X | | | X | X | | X | X | X | X | |
| MW-3S | 06 | | 1540 | | | X | X | | | X | X | | X | X | X | X | |
| MW-3D | 07 | | 1520 | | | X | X | | | X | X | | X | X | X | X | |
| MW-4S | 08 | | 1700 | | | X | X | | | X | X | | X | X | X | X | |
| MW-4D | 09 | ↓ | 1700 | ↓ | ↓ | X | X | | | X | X | | X | X | X | X | |
| | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Goalwin | H&A | 2/14/23 | 0847 |
| Received by: | Mylinh Pham | PBI | 2/14/23 | 8:47am |
| Relinquished by: | | | | |
| Received by: | | Samples received at 2 °C | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 23, 2023

Michael Erdahl
Friedman & Bruya, Inc.
5500 4th Avenue South
Seattle, WA 98108

Re: Analytical Data for Project 302179
Laboratory Reference No. 2302-171

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on February 14, 2023.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

**Case Narrative**

Samples were collected on February 13, 2023 and received by the laboratory on February 14, 2023. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-1S** | | | | | |
| Laboratory ID: | 02-171-01 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *106* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-1D** | | | | | |
| Laboratory ID: | 02-171-02 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *98* | *65-122* | | | | |



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Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-1DD** | | | | | |
| Laboratory ID: | 02-171-03 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *92* | *65-122* | | | | |



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Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-2S** | | | | | |
| Laboratory ID: | 02-171-04 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *99* | *65-122* | | | | |



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Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-2D** | | | | | |
| Laboratory ID: | 02-171-05 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *94* | *65-122* | | | | |



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Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

**VOLATILE PETROLEUM HYDROCARBONS**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-3S** | | | | | |
| Laboratory ID: | 02-171-06 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C8-C10 | **68** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C10-C12 | **120** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C12-C13 | **110** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aromatic: | **300** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *85* | *65-122* | | | | |



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Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

**VOLATILE PETROLEUM HYDROCARBONS**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-3D** | | | | | |
| Laboratory ID: | 02-171-07 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C12-C13 | **100** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aromatic: | **100** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *100* | *65-122* | | | | |



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Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-4S** | | | | | |
| Laboratory ID: | 02-171-08 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *99* | *65-122* | | | | |



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Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

**VOLATILE PETROLEUM HYDROCARBONS**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-4D** | | | | | |
| Laboratory ID: | 02-171-09 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *95* | *65-122* | | | | |



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Date of Report: February 23, 2023
Samples Submitted: February 14, 2023
Laboratory Reference: 2302-171
Project: 302179

**VOLATILE PETROLEUM HYDROCARBONS**
**QUALITY CONTROL**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0222W2 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 2-22-23 | 2-22-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 2-22-23 | 2-22-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *91* | *65-122* | | | | |

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPIKE BLANKS** | | | | | | | | | | | |
| Laboratory ID: | SB0222W1 | | | | | | | | | | |
| | SB | SBD | SB | SBD | | SB | SBD | | | | |
| Benzene | **51.1** | **51.8** | 50.0 | 50.0 | | **102** | **104** | 80-116 | 1 | 12 | |
| Toluene | **51.1** | **52.0** | 50.0 | 50.0 | | **102** | **104** | 82-118 | 2 | 12 | |
| Ethylbenzene | **53.3** | **54.1** | 50.0 | 50.0 | | **107** | **108** | 82-118 | 2 | 12 | |
| m,p-Xylene | **53.2** | **53.1** | 50.0 | 50.0 | | **106** | **106** | 81-118 | 0 | 12 | |
| o-Xylene | **53.1** | **52.8** | 50.0 | 50.0 | | **106** | **106** | 81-116 | 1 | 11 | |
| *Surrogate:* | | | | | | | | | | | |
| *Fluorobenzene* | | | | | | *103* | *100* | *65-122* | | | |



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OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY 02-171


Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com


SUBCONTRACTER Onsite

PROJECT NAME/NO. 302179

PO # D-168

REMARKS EIM EDD



TURNAROUND TIME
X Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

| | | | | | | ANALYSES REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | EPH | VPH | Cr VI | | | | | | | | Notes |
| MW-1S | 1 | 2/13/2023 | 1120 | water | 3 | | X | | | | | | | | | |
| MW-1D | 2 | 2/13/2023 | 1120 | water | 3 | | X | | | | | | | | | |
| MW-1DD | 3 | 2/13/2023 | 1200 | water | 3 | | X | | | | | | | | | |
| MW-2S | 4 | 2/13/2023 | 1325 | water | 3 | | X | | | | | | | | | |
| MW-2D | 5 | 2/13/2023 | 1335 | water | 3 | | X | | | | | | | | | |
| MW-3S | 6 | 2/13/2023 | 1540 | water | 3 | | X | | | | | | | | | |
| MW-3D | 7 | 2/13/2023 | 1520 | water | 3 | | X | | | | | | | | | |
| MW-4S | 8 | 2/13/2023 | 1700 | water | 3 | | X | | | | | | | | | |
| MW-4D | 9 | 2/13/2023 | 1700 | water | 3 | | X | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |


*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*


| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 2/14/23 | 0932 |
| Received by: | Michelle Bruya | N Biffin | OSE | 2/14/23 | 0932 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

**RE: 302179**
**Work Order Number: 2302235**

March 02, 2023

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 9 sample(s) on 2/14/2023 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***
***Hexavalent Chromium by SM 3500 Cr B***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *03/02/2023*

**CLIENT:** Friedman & Bruya
**Project:** 302179
**Work Order:** 2302235

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2302235-001 | MW-1S | 02/13/2023 11:20 AM | 02/14/2023 11:00 AM |
| 2302235-002 | MW-1D | 02/13/2023 11:20 AM | 02/14/2023 11:00 AM |
| 2302235-003 | MW-1DD | 02/13/2023 12:00 PM | 02/14/2023 11:00 AM |
| 2302235-004 | MW-2S | 02/13/2023 1:25 PM | 02/14/2023 11:00 AM |
| 2302235-005 | MW-2D | 02/13/2023 1:35 PM | 02/14/2023 11:00 AM |
| 2302235-006 | MW-3S | 02/13/2023 3:40 PM | 02/14/2023 11:00 AM |
| 2302235-007 | MW-3D | 02/13/2023 3:20 PM | 02/14/2023 11:00 AM |
| 2302235-008 | MW-4S | 02/13/2023 5:00 PM | 02/14/2023 11:00 AM |
| 2302235-009 | MW-4D | 02/13/2023 5:00 PM | 02/14/2023 11:00 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2302235**

Date: **3/2/2023**

**CLIENT:** Friedman & Bruya
**Project:** 302179

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Associated LCS is outside of control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Method Detection Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2302235**
Date Reported: **3/2/2023**

**Client:** Friedman & Bruya
**Collection Date:** 2/13/2023 11:20:00 AM
**Project:** 302179
**Lab ID:** 2302235-001
**Matrix:** Water
**Client Sample ID:** **MW-1S**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 39473 | | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.6 | 39.4 | | µg/L | 1 | 02/28/23 11:04:23 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.8 | 20.6 | | µg/L | 1 | 02/28/23 11:04:23 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.8 | 9.80 | | µg/L | 1 | 02/28/23 11:04:23 |
| Aliphatic Hydrocarbon (C16-C21) | 19.8 | 39.8 | 14.2 | J | µg/L | 1 | 02/28/23 11:04:23 |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.8 | 22.5 | | µg/L | 1 | 02/28/23 11:04:23 |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.6 | 25.9 | | µg/L | 1 | 03/01/23 10:29:51 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.8 | 8.86 | | µg/L | 1 | 03/01/23 10:29:51 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.8 | 6.95 | | µg/L | 1 | 03/01/23 10:29:51 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.8 | 12.7 | | µg/L | 1 | 03/01/23 10:29:51 |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.8 | 26.4 | | µg/L | 1 | 03/01/23 10:29:51 |
| Surr: 1-Chlorooctadecane | 52.4 | 50 - 150 | | | %Rec | 1 | 02/28/23 11:04:23 |
| Surr: o-Terphenyl | 90.3 | 50 - 150 | | | %Rec | 1 | 03/01/23 10:29:51 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R82068 | | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 02/15/23 18:10:00 |

# Analytical Report

Work Order: **2302235**
Date Reported: **3/2/2023**

**Client:** Friedman & Bruya
**Collection Date:** 2/13/2023 11:20:00 AM
**Project:** 302179
**Lab ID:** 2302235-002
**Matrix:** Water
**Client Sample ID:** **MW-1D**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 39473 | | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.7 | 39.5 | | µg/L | 1 | 02/28/23 11:27:23 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.8 | 20.6 | | µg/L | 1 | 02/28/23 11:27:23 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.8 | 9.81 | | µg/L | 1 | 02/28/23 11:27:23 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.8 | 14.2 | | µg/L | 1 | 02/28/23 11:27:23 |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.8 | 22.5 | | µg/L | 1 | 02/28/23 11:27:23 |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.7 | 26.0 | | µg/L | 1 | 03/01/23 10:52:44 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.8 | 8.87 | | µg/L | 1 | 03/01/23 10:52:44 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.8 | 6.96 | | µg/L | 1 | 03/01/23 10:52:44 |
| Aromatic Hydrocarbon (C16-C21) | 18.2 | 39.8 | 12.7 | J | µg/L | 1 | 03/01/23 10:52:44 |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.8 | 26.5 | | µg/L | 1 | 03/01/23 10:52:44 |
| Surr: 1-Chlorooctadecane | 50.7 | 50 - 150 | | | %Rec | 1 | 02/28/23 11:27:23 |
| Surr: o-Terphenyl | 82.6 | 50 - 150 | | | %Rec | 1 | 03/01/23 10:52:44 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R82068 | | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 02/15/23 18:15:00 |

# Analytical Report

Work Order: **2302235**
Date Reported: **3/2/2023**

**Client:** Friedman & Bruya
**Collection Date:** 2/13/2023 12:00:00 PM
**Project:** 302179
**Lab ID:** 2302235-003
**Matrix:** Water
**Client Sample ID:** **MW-1DD**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 39473 | | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | 49.2 | 79.2 | 39.2 | J | µg/L | 1 | 02/28/23 11:50:25 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.6 | 20.4 | | µg/L | 1 | 02/28/23 11:50:25 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.6 | 9.75 | | µg/L | 1 | 02/28/23 11:50:25 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.6 | 14.1 | | µg/L | 1 | 02/28/23 11:50:25 |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.6 | 22.4 | | µg/L | 1 | 02/28/23 11:50:25 |
| Aromatic Hydrocarbon (C8-C10) | 32.2 | 79.2 | 25.8 | J | µg/L | 1 | 03/01/23 11:15:42 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.6 | 8.81 | | µg/L | 1 | 03/01/23 11:15:42 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.6 | 6.91 | | µg/L | 1 | 03/01/23 11:15:42 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.6 | 12.6 | | µg/L | 1 | 03/01/23 11:15:42 |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.6 | 26.3 | | µg/L | 1 | 03/01/23 11:15:42 |
| Surr: 1-Chlorooctadecane | 57.6 | 50 - 150 | | | %Rec | 1 | 02/28/23 11:50:25 |
| Surr: o-Terphenyl | 108 | 50 - 150 | | | %Rec | 1 | 03/01/23 11:15:42 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R82068 | | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 02/15/23 18:19:00 |

# Analytical Report

Work Order: **2302235**
Date Reported: **3/2/2023**

**Client:** Friedman & Bruya
**Collection Date:** 2/13/2023 1:25:00 PM
**Project:** 302179
**Lab ID:** 2302235-004
**Matrix:** Water
**Client Sample ID:** **MW-2S**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 39473 | | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.0 | 39.1 | | µg/L | 1 | 02/28/23 12:13:18 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.5 | 20.4 | | µg/L | 1 | 02/28/23 12:13:18 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.5 | 9.74 | | µg/L | 1 | 02/28/23 12:13:18 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.5 | 14.1 | | µg/L | 1 | 02/28/23 12:13:18 |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.5 | 22.3 | | µg/L | 1 | 02/28/23 12:13:18 |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.0 | 25.8 | | µg/L | 1 | 03/01/23 11:38:38 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.5 | 8.80 | | µg/L | 1 | 03/01/23 11:38:38 |
| Aromatic Hydrocarbon (C12-C16) | 20.2 | 39.5 | 6.90 | J | µg/L | 1 | 03/01/23 11:38:38 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.5 | 12.6 | | µg/L | 1 | 03/01/23 11:38:38 |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.5 | 26.3 | | µg/L | 1 | 03/01/23 11:38:38 |
| Surr: 1-Chlorooctadecane | 52.8 | 50 - 150 | | | %Rec | 1 | 02/28/23 12:13:18 |
| Surr: o-Terphenyl | 86.8 | 50 - 150 | | | %Rec | 1 | 03/01/23 11:38:38 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R82068 | | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 02/15/23 19:08:00 |

# Analytical Report

Work Order: **2302235**
Date Reported: **3/2/2023**

**Client:** Friedman & Bruya
**Collection Date:** 2/13/2023 1:35:00 PM
**Project:** 302179
**Lab ID:** 2302235-005
**Matrix:** Water
**Client Sample ID:** **MW-2D**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 39473 | | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.6 | 39.4 | | µg/L | 1 | 02/28/23 12:59:06 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.8 | 20.6 | | µg/L | 1 | 02/28/23 12:59:06 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.8 | 9.80 | | µg/L | 1 | 02/28/23 12:59:06 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.8 | 14.2 | | µg/L | 1 | 02/28/23 12:59:06 |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.8 | 22.5 | | µg/L | 1 | 02/28/23 12:59:06 |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.6 | 25.9 | | µg/L | 1 | 03/01/23 14:11:09 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.8 | 8.86 | | µg/L | 1 | 03/01/23 14:11:09 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.8 | 6.95 | | µg/L | 1 | 03/01/23 14:11:09 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.8 | 12.7 | | µg/L | 1 | 03/01/23 14:11:09 |
| Aromatic Hydrocarbon (C21-C34) | 35.8 | 39.8 | 26.4 | J | µg/L | 1 | 03/01/23 14:11:09 |
| Surr: 1-Chlorooctadecane | 54.2 | 50 - 150 | | | %Rec | 1 | 02/28/23 12:59:06 |
| Surr: o-Terphenyl | 99.2 | 50 - 150 | | | %Rec | 1 | 03/01/23 14:11:09 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R82068 | | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 02/15/23 19:13:00 |

# Analytical Report

Work Order: **2302235**
Date Reported: **3/2/2023**

**Client:** Friedman & Bruya
**Collection Date:** 2/13/2023 3:40:00 PM
**Project:** 302179
**Lab ID:** 2302235-006
**Matrix:** Water
**Client Sample ID:** **MW-3S**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 39473 | | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.5 | 39.4 | | µg/L | 1 | 02/28/23 13:22:06 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.8 | 20.5 | | µg/L | 1 | 02/28/23 13:22:06 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.8 | 9.79 | | µg/L | 1 | 02/28/23 13:22:06 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.8 | 14.2 | | µg/L | 1 | 02/28/23 13:22:06 |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.8 | 22.5 | | µg/L | 1 | 02/28/23 13:22:06 |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.5 | 25.9 | | µg/L | 1 | 03/01/23 14:34:07 |
| Aromatic Hydrocarbon (C10-C12) | 37.6 | 39.8 | 8.85 | J | µg/L | 1 | 03/01/23 14:34:07 |
| Aromatic Hydrocarbon (C12-C16) | 110 | 39.8 | 6.94 | | µg/L | 1 | 03/01/23 14:34:07 |
| Aromatic Hydrocarbon (C16-C21) | 81.8 | 39.8 | 12.7 | Q | µg/L | 1 | 03/01/23 14:34:07 |
| Aromatic Hydrocarbon (C21-C34) | 44.3 | 39.8 | 26.4 | Q | µg/L | 1 | 03/01/23 14:34:07 |
| Surr: 1-Chlorooctadecane | 51.1 | 50 - 150 | | | %Rec | 1 | 02/28/23 13:22:06 |
| Surr: o-Terphenyl | 70.0 | 50 - 150 | | | %Rec | 1 | 03/01/23 14:34:07 |

**NOTES:**
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R82068 | | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 02/15/23 19:18:00 |

# Analytical Report

Work Order: **2302235**
Date Reported: **3/2/2023**

**Client:** Friedman & Bruya
**Collection Date:** 2/13/2023 3:20:00 PM
**Project:** 302179
**Lab ID:** 2302235-007
**Matrix:** Water
**Client Sample ID:** **MW-3D**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 39473 | | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 80.0 | 39.6 | | µg/L | 1 | 02/28/23 14:08:25 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | 20.7 | | µg/L | 1 | 02/28/23 14:08:25 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 40.0 | 9.85 | | µg/L | 1 | 02/28/23 14:08:25 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 40.0 | 14.3 | | µg/L | 1 | 02/28/23 14:08:25 |
| Aliphatic Hydrocarbon (C21-C34) | ND | 40.0 | 22.6 | | µg/L | 1 | 02/28/23 14:08:25 |
| Aromatic Hydrocarbon (C8-C10) | ND | 80.0 | 26.1 | | µg/L | 1 | 03/01/23 15:20:05 |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | 8.91 | | µg/L | 1 | 03/01/23 15:20:05 |
| Aromatic Hydrocarbon (C12-C16) | ND | 40.0 | 6.99 | | µg/L | 1 | 03/01/23 15:20:05 |
| Aromatic Hydrocarbon (C16-C21) | ND | 40.0 | 12.8 | | µg/L | 1 | 03/01/23 15:20:05 |
| Aromatic Hydrocarbon (C21-C34) | 46.4 | 40.0 | 26.6 | Q | µg/L | 1 | 03/01/23 15:20:05 |
| Surr: 1-Chlorooctadecane | 33.8 | 50 - 150 | | S | %Rec | 1 | 02/28/23 14:08:25 |
| Surr: o-Terphenyl | 88.4 | 50 - 150 | | | %Rec | 1 | 03/01/23 15:20:05 |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R82068 | | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 02/15/23 19:23:00 |

# Analytical Report

Work Order: **2302235**
Date Reported: **3/2/2023**

**Client:** Friedman & Bruya
**Collection Date:** 2/13/2023 5:00:00 PM
**Project:** 302179
**Lab ID:** 2302235-008
**Matrix:** Water
**Client Sample ID:** **MW-4S**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 39473 | | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.9 | 39.6 | | µg/L | 1 | 02/28/23 14:31:31 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.9 | 20.6 | | µg/L | 1 | 02/28/23 14:31:31 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.9 | 9.84 | | µg/L | 1 | 02/28/23 14:31:31 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.9 | 14.3 | | µg/L | 1 | 02/28/23 14:31:31 |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.9 | 22.6 | | µg/L | 1 | 02/28/23 14:31:31 |
| Aromatic Hydrocarbon (C8-C10) | 35.6 | 79.9 | 26.0 | J | µg/L | 1 | 03/01/23 15:42:55 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.9 | 8.89 | | µg/L | 1 | 03/01/23 15:42:55 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.9 | 6.98 | | µg/L | 1 | 03/01/23 15:42:55 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.9 | 12.8 | | µg/L | 1 | 03/01/23 15:42:55 |
| Aromatic Hydrocarbon (C21-C34) | 37.2 | 39.9 | 26.5 | J | µg/L | 1 | 03/01/23 15:42:55 |
| Surr: 1-Chlorooctadecane | 56.0 | 50 - 150 | | | %Rec | 1 | 02/28/23 14:31:31 |
| Surr: o-Terphenyl | 83.1 | 50 - 150 | | | %Rec | 1 | 03/01/23 15:42:55 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R82068 | | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 02/15/23 19:28:00 |

# Analytical Report

Work Order: **2302235**
Date Reported: **3/2/2023**

**Client:** Friedman & Bruya
**Collection Date:** 2/13/2023 5:00:00 PM
**Project:** 302179
**Lab ID:** 2302235-009
**Matrix:** Water
**Client Sample ID:** **MW-4D**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 39473 | | | Analyst: KJ |
| Aliphatic Hydrocarbon (C8-C10) | ND | 78.9 | 39.1 | | µg/L | 1 | 02/28/23 14:54:31 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.5 | 20.4 | | µg/L | 1 | 02/28/23 14:54:31 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.5 | 9.72 | | µg/L | 1 | 02/28/23 14:54:31 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.5 | 14.1 | | µg/L | 1 | 02/28/23 14:54:31 |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.5 | 22.3 | | µg/L | 1 | 02/28/23 14:54:31 |
| Aromatic Hydrocarbon (C8-C10) | ND | 78.9 | 25.7 | | µg/L | 1 | 03/01/23 16:05:52 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.5 | 8.79 | | µg/L | 1 | 03/01/23 16:05:52 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.5 | 6.89 | | µg/L | 1 | 03/01/23 16:05:52 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.5 | 12.6 | | µg/L | 1 | 03/01/23 16:05:52 |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.5 | 26.2 | | µg/L | 1 | 03/01/23 16:05:52 |
| Surr: 1-Chlorooctadecane | 51.1 | 50 - 150 | | | %Rec | 1 | 02/28/23 14:54:31 |
| Surr: o-Terphenyl | 90.6 | 50 - 150 | | | %Rec | 1 | 03/01/23 16:05:52 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R82068 | | | Analyst: SS |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 02/15/23 19:46:00 |

**Work Order:** 2302235
**CLIENT:** Friedman & Bruya
**Project:** 302179

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **LCS-R82068** | SampType: **LCS** | | | Units: **mg/L** | | Prep Date: **2/15/2023** | | RunNo: **82068** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R82068** | | | | | Analysis Date: **2/15/2023** | | SeqNo: **1703059** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.238 | 0.0500 | 0.2500 | 0 | 95.4 | 82.2 | 115 | | | | |

| Sample ID: **MB-R82068** | SampType: **MBLK** | | | Units: **mg/L** | | Prep Date: **2/15/2023** | | RunNo: **82068** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R82068** | | | | | Analysis Date: **2/15/2023** | | SeqNo: **1703061** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | | | | |

| Sample ID: **2302235-003BDUP** | SampType: **DUP** | | | Units: **mg/L** | | Prep Date: **2/15/2023** | | RunNo: **82068** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1DD** | Batch ID: **R82068** | | | | | Analysis Date: **2/15/2023** | | SeqNo: **1703065** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | 0 | 0 | 20 | H |

| Sample ID: **2302235-003BMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **2/15/2023** | | RunNo: **82068** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1DD** | Batch ID: **R82068** | | | | | Analysis Date: **2/15/2023** | | SeqNo: **1703066** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.244 | 0.0500 | 0.2500 | 0 | 97.5 | 59.4 | 125 | | | | H |

| Sample ID: **2302235-003BMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **2/15/2023** | | RunNo: **82068** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1DD** | Batch ID: **R82068** | | | | | Analysis Date: **2/15/2023** | | SeqNo: **1703067** | | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.247 | 0.0500 | 0.2500 | 0 | 98.9 | 59.4 | 125 | 0.2438 | 1.38 | 20 | H |

**Work Order:** 2302235
**CLIENT:** Friedman & Bruya
**Project:** 302179

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-39473** SampType: **MBLK** Units: **µg/L** Prep Date: **2/17/2023** RunNo: **82153**
Client ID: **MBLKW** Batch ID: **39473** Analysis Date: **2/28/2023** SeqNo: **1705719**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 80.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 40.0 | | 0 | 0 | | | | | | |
| Surr: 1-Chlorooctadecane | 247 | | 400.0 | | 61.8 | 50 | 150 | | | | |

Sample ID: **LCS-39473** SampType: **LCS** Units: **µg/L** Prep Date: **2/17/2023** RunNo: **82153**
Client ID: **LCSW** Batch ID: **39473** Analysis Date: **2/28/2023** SeqNo: **1705720**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 243 | 80.0 | 1,000 | 0 | 24.3 | 5.88 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 242 | 40.0 | 500.0 | 0 | 48.4 | 25.3 | 107 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 328 | 40.0 | 500.0 | 0 | 65.7 | 42.5 | 113 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 324 | 40.0 | 500.0 | 0 | 64.8 | 42.7 | 118 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 278 | 40.0 | 500.0 | 0 | 55.6 | 27.8 | 137 | | | | |
| Surr: 1-Chlorooctadecane | 309 | | 400.0 | | 77.2 | 50 | 150 | | | | |

Sample ID: **2302235-004AMS** SampType: **MS** Units: **µg/L** Prep Date: **2/17/2023** RunNo: **82153**
Client ID: **MW-2S** Batch ID: **39473** Analysis Date: **2/28/2023** SeqNo: **1705725**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 211 | 88.1 | 1,102 | 0 | 19.1 | 5 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 228 | 44.1 | 550.9 | 0 | 41.4 | 17.1 | 108 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 299 | 44.1 | 550.9 | 0 | 54.3 | 35.7 | 111 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 303 | 44.1 | 550.9 | 0 | 55.0 | 41.1 | 110 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 237 | 44.1 | 550.9 | 0 | 43.0 | 31.4 | 125 | | | | |
| Surr: 1-Chlorooctadecane | 253 | | 440.7 | | 57.4 | 50 | 150 | | | | |

**Work Order:** 2302235
**CLIENT:** Friedman & Bruya
**Project:** 302179

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2302235-006ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **2/17/2023** RunNo: **82153**
Client ID: **MW-3S** Batch ID: **39473** Analysis Date: **2/28/2023** SeqNo: **1705728**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 88.0 | | 0 | 0 | | | 0 | 0 | 25 | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 44.0 | | 0 | 0 | | | 0 | 0 | 25 | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 44.0 | | 0 | 0 | | | 0 | 0 | 25 | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 44.0 | | 0 | 0 | | | 0 | 0 | 25 | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 44.0 | | 0 | 0 | | | 0 | 0 | 25 | |
| Surr: 1-Chlorooctadecane | 279 | | 439.9 | | 63.4 | 50 | 150 | | 0 | | |

Sample ID: **MB-39473** SampType: **MBLK** Units: **µg/L** Prep Date: **2/17/2023** RunNo: **82153**
Client ID: **MBLKW** Batch ID: **39473** Analysis Date: **3/1/2023** SeqNo: **1706268**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 80.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C12-C16) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 40.0 | | 0 | 0 | | | | | | |
| Surr: o-Terphenyl | 289 | | 400.0 | | 72.3 | 50 | 150 | | | | |

Sample ID: **LCS-39473** SampType: **LCS** Units: **µg/L** Prep Date: **2/17/2023** RunNo: **82153**
Client ID: **LCSW** Batch ID: **39473** Analysis Date: **3/1/2023** SeqNo: **1706270**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 390 | 80.0 | 1,000 | 0 | 39.0 | 25.2 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 298 | 40.0 | 500.0 | 0 | 59.6 | 46.2 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 224 | 40.0 | 500.0 | 0 | 44.8 | 39.9 | 107 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 475 | 40.0 | 500.0 | 0 | 95.0 | 53.4 | 125 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 391 | 40.0 | 500.0 | 0 | 78.2 | 46.5 | 138 | | | | |
| Surr: o-Terphenyl | 295 | | 400.0 | | 73.7 | 50 | 150 | | | | |

**Work Order:** 2302235
**CLIENT:** Friedman & Bruya
**Project:** 302179

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2302235-004AMS** SampType: **MS** Units: **µg/L** Prep Date: **2/17/2023** RunNo: **82153**
Client ID: **MW-2S** Batch ID: **39473** Analysis Date: **3/1/2023** SeqNo: **1706275**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 418 | 88.1 | 1,102 | 0 | 37.9 | 9.66 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 366 | 44.1 | 550.9 | 0 | 66.5 | 18 | 105 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 471 | 44.1 | 550.9 | 20.19 | 81.9 | 45.3 | 109 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 565 | 44.1 | 550.9 | 0 | 102 | 40.6 | 118 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 489 | 44.1 | 550.9 | 0 | 88.8 | 38.1 | 137 | | | | |
| Surr: o-Terphenyl | 425 | | 440.7 | | 96.5 | 50 | 150 | | | | |

Sample ID: **2302235-006ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **2/17/2023** RunNo: **82153**
Client ID: **MW-3S** Batch ID: **39473** Analysis Date: **3/1/2023** SeqNo: **1706278**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 88.0 | | 0 | 0 | | | 0 | 0 | 25 | |
| Aromatic Hydrocarbon (C10-C12) | 49.6 | 44.0 | | 0 | 0 | | | 37.61 | 27.5 | 25 | |
| Aromatic Hydrocarbon (C12-C16) | 147 | 44.0 | | 0 | 0 | | | 110.1 | 28.7 | 25 | |
| Aromatic Hydrocarbon (C16-C21) | 104 | 44.0 | | 0 | 0 | | | 81.82 | 24.1 | 25 | Q |
| Aromatic Hydrocarbon (C21-C34) | 50.1 | 44.0 | | 0 | 0 | | | 44.29 | 12.4 | 25 | Q |
| Surr: o-Terphenyl | 403 | | 439.9 | | 91.6 | 50 | 150 | | 0 | | |

**NOTES:**
Q - Associated calibration verification is above acceptance criteria. Result may be high-biased.

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | **FB** | Work Order Number: | **2302235** |
| Logged by: | **Clare Griggs** | Date Received: | **2/14/2023 11:00:00 AM** |

## Chain of Custody

| | | | | |
|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | |

## Log In

| | | | | |
|---|---|---|---|---|
| 3. | Coolers are present? | Yes ☑ | No ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes ☑ | No ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes ☐ | No ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes ☑ | No ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 10. | Are samples properly preserved? | Yes ☑ | No ☐ | |
| 11. | Was preservative added to bottles? | Yes ☑ | No ☐ | NA ☐ HCL |
| 12. | Is there headspace in the VOA vials? | Yes ☐ | No ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes ☑ | No ☐ | |
| 14. | Does paperwork match bottle labels? | Yes ☑ | No ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 16. | Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 17. | Were all holding times able to be met? | Yes ☐ | No ☑ | |

## Special Handling (if applicable)

| | | | | |
|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes ☐ | No ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

**Item Information**

| Item # | Temp ºC |
|---|---|
| Sample | 1.8 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

23P2235



Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO. 302179

PO # D-169

REMARKS EIM EDD

TURNAROUND TIME
X Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: EPH | VPH | Cr VI | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1S | | 2/13/2023 | 1120 | water | 2 | X | | X | | | | | | | | |
| MW-1D | | 2/13/2023 | 1120 | water | 2 | X | | X | | | | | | | | |
| MW-1DD | | 2/13/2023 | 1200 | water | 2 | X | | X | | | | | | | | |
| MW-2S | | 2/13/2023 | 1325 | water | 2 | X | | X | | | | | | | | |
| MW-2D | | 2/13/2023 | 1335 | water | 2 | X | | X | | | | | | | | |
| MW-3S | | 2/13/2023 | 1540 | water | 2 | X | | X | | | | | | | | |
| MW-3D | | 2/13/2023 | 1520 | water | 2 | X | | X | | | | | | | | |
| MW-4S | | 2/13/2023 | 1700 | water | 2 | X | | X | | | | | | | | |
| MW-4D | | 2/13/2023 | 1700 | water | 2 | X | | X | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 2/14/23 | 0932 |
| Received by: | | Emma Tuel | Fremont Analytical | 2/14/23 | 11:05 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

# Data Usability Summary Report

**Project Name: Kosmos Mill**

**Project Description: Groundwater Samples**

**Sample Date(s): 10 and 11 May 2023**

**Analytical Laboratory: Friedman & Bruya – Seattle, WA**

**Fremont Analytical – Seattle, WA**

**Onsite Environmental – Redmond, WA**

**Validation Performed by: Santa McKenna**

**Validation Reviewed by: Katherine Miller**

**Validation Date: 5 July 2023**

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Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the analytical results for Sample Delivery Group(s) (SDG) listed. This DUSR is organized into the following sections:

1. **Sample Delivery Group Number 305192**
2. **Sample Delivery Group Number 305211**
3. **Precision and Accuracy [for SDG(s) above]**
4. **Explanations**
5. **Glossary**
6. **Abbreviations**
7. **Qualifiers**

**References**

This data validation and usability assessment was performed per the guidance and requirements established by the United States Environmental Protection Agency (USEPA) using the following reference materials:

- National Functional Guidelines (NFG) for Inorganic Data Review.
- National Functional Guidelines (NFG) for Organic Data Review.
- The project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section).

Data reported in this sampling event were reported to the laboratory reporting limit (RL) [OR] the laboratory method detection limit (MDL). Results found between the MDL and RL are flagged J as estimated.

Sample data were qualified in accordance with the laboratory's standard operating procedures (SOP). The results presented in each laboratory report were found to be compliant with the data quality objectives (DQO) for the project and therefore usable; any exceptions are noted in the following pages.

# 1. Sample Delivery Group Number 305192

## 1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 305192, dated 6 June 2023. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol.

- Samples for Volatile Petroleum Hydrocarbon (VPH) analysis were subcontracted to Onsite Environmental, Inc. – Redmond, WA (Laboratory IDs 2305-121-01through 2305-121-04).
- Samples for EPH and hexavalent chromium analysis were subcontracted to Freemont Analytical – Seattle, WA (Laboratory IDs 2305262-001A through 2305262-004A).

Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- Custody seals were not used when samples were transported between subcontracted laboratories.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| MW-1D-20230510 | N | 305192-01 | 05/10/2023 | WG | A, B, C, D, E, F, G |
| MW-2D-20230510 | N | 305192-02 | 05/10/2023 | WG | A, B, C, D, E, F, G |
| MW-3D-20230510 | N | 305192-03 | 05/10/2023 | WG | A, B, C, D, E, F, G |
| MW-4D-20230510 | N | 305192-04 | 05/10/2023 | WG | A, B, C, D, E, F, G |
| MW-1D-20230510 | N | 2305-121-01 | 05/10/2023 | WG | H, I |
| MW-2D-20230510 | N | 2305-121-02 | 05/10/2023 | WG | H, I |
| MW-3D-20230510 | N | 2305-121-03 | 05/10/2023 | WG | H, I |
| MW-4D-20230510 | N | 2305-121-04 | 05/10/2023 | WG | H, I |
| MW-1D-20230510 | N | 2305262-001A | 05/10/2023 | WG | J, K |
| MW-2D-20230510 | N | 2305262-002A | 05/10/2023 | WG | J, K |
| MW-3D-20230510 | N | 2305262-003A | 05/10/2023 | WG | J, K |
| MW-4D-20230510 | N | 2305262-004A | 05/10/2023 | WG | J, K |

| Method Holding Times | | | |
|---|---|---|---|
| A. | E1631E | Mercury | 28 days preserved; 48 hours unpreserved |
| B. | NWTPH-DX | Total Petroleum Hydrocarbons (TPH) Total Diesel | 14 days for liquid, preserved 7 days for liquid unpreserved |
| C. | NWTPH-GX | Total Petroleum Hydrocarbons (TPH) Total Diesel | 14 days for liquid, preserved 7 days for liquid unpreserved |
| D. | SM2540D | Total Suspended Solids | 7 days |
| E. | SW6020B | Metals | 180 days for liquid |
| F. | SW8260D | Volatile Organic Compounds (VOCs) | 14 days for liquid, preserved 7 days for liquid unpreserved |
| G. | SW8270E | Polycyclic Aromatic Hydrocarbons (PAHs) | 7 days extraction / 40 days analysis for liquid |

| Method Holding Times | | | |
|---|---|---|---|
| H. | NWTPH-VPH | VPH Fractions | 14 days preserved; 7 days unpreserved |
| I. | SW8021B | VOCs | 14 days |
| J. | NWEPH | Extractable Petroleum Hydrocarbon (EPH) Fractions | 14 days preserved; 7 days unpreserved |
| K. | SM3500-CR B | Hexavalent Chromium | 24 hours |

## 1.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

## 1.3 REPORTING LIMITS AND SAMPLE DILUTIONS

The RLs for the samples within this SDG met or were below the minimum reporting limit (RL) requirements specified by the project specific QAPP with the following exceptions:

| Sample ID | Lab ID | Analyte/ Method | Dilution Factor |
|---|---|---|---|
| All samples | All samples | NWTPH-diesel | 1.2x |
| All samples | All samples | Copper | 1x |
| All samples | All samples | 2-Butanone (MEK) | 1x |
| All samples | All samples | Acetone | 1x |
| All samples | All samples | Bromoform | 1x |
| All samples | All samples | Bromomethane | 1x |
| All samples | All samples | Hexane | 1x |

## 1.4 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified quality control (QC) limits, with the following exceptions:

| Method | Sample ID | Lab ID | Surrogate | Dilution | %R | Qualification |
|---|---|---|---|---|---|---|
| NWEPH | MW-2D-20230510 | 2305262-002A | 1-Chlorooctadecane | 1x | 34.1 % | J-/UJ target compounds |

## 1.5 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses associated with client samples exhibited recoveries and relative percent differences (RPDs) within the specified limits.

## 1.6 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) below were used for matrix spike/matrix spike duplicate (MS/MSD):

| Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 305192-04 | 305192-04 MS | 6020B |
| 305129-02 | 305129-02 MS | 1631E |
| 2305230-001A | 2305230-001AMS/MSD | SM 3500 |

The MS/MSD recoveries and the relative percent difference (RPD) between the MS and MSD results were within the specified limits.

### 1.7 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

The analysis of the blank samples for field quality control was free of target compounds.

### 1.8 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The following sample(s) were used for laboratory duplicate analysis and the RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL):

| Lab Sample Number | Laboratory Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 305192-01 | 305192-01 (Duplicate) | NWTPH-Gx |
| 305192-02 | 305192-02 (Duplicate) | 2540D |
| 2305262-003A | 2305262-003ADUP | NWEPH |
| 2305230-001A | 2305230-001ADUP | SM 3500 |

No field duplicates were collected in this data set.

### 1.9 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the DQOs for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable as no data was rejected. A summary of qualifiers applied to this data set is shown in Table E-13.

# 2. Sample Delivery Group Number 305211

## 2.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 305211, dated 6 June 2023. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol.

- Samples for Volatile Petroleum Hydrocarbon (VPH) and analysis were subcontracted to Onsite Environmental, Inc. – Redmond, WA (Laboratory IDs 05-148-01 through 05-148-05).
- Samples for EPH and hexavalent chromium analysis were subcontracted to Freemont Analytical – Seattle, WA (Laboratory IDs 2305259-001 through 2305259-005).

Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- Custody seals were not used when samples were transported between subcontracted laboratories.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| MW-1S-20230511 | N | 305211-01 | 05/11/2023 | WG | A, B, C, D, E, F, G |
| MW-2S-20230511 | N | 305211-02 | 05/11/2023 | WG | A, B, C, D, E, F, G |
| MW-2SD-20230511 | FD | 305211-03 | 05/11/2023 | WG | A, B, C, D, E, F, G |
| MW-3S-20230511 | N | 305211-04 | 05/11/2023 | WG | A, B, C, D, E, F, G |
| MW-4S-20230511 | N | 305211-05 | 05/11/2023 | WG | A, B, C, D, E, F, G |
| MW-1S-20230511 | N | 2305-148-01 | 05/11/2023 | WG | H, I |
| MW-2S-20230511 | N | 2305-148-02 | 05/11/2023 | WG | H, I |
| MW-2SD-20230511 | FD | 2305-148-03 | 05/11/2023 | WG | H, I |
| MW-3S-20230511 | N | 2305-148-04 | 05/11/2023 | WG | H, I |
| MW-4S-20230511 | N | 2305-148-05 | 05/11/2023 | WG | H, I |
| MW-1S-20230511 | N | 2305259-001A | 05/11/2023 | WG | J |
| MW-1S-20230511 | N | 2305259-001B | 05/11/2023 | WG | K |
| MW-2S-20230511 | N | 2305259-002A | 05/11/2023 | WG | J |
| MW-2S-20230511 | N | 2305259-002B | 05/11/2023 | WG | K |
| MW-2SD-20230511 | FD | 2305259-003A | 05/11/2023 | WG | J |
| MW-2SD-20230511 | FD | 2305259-003B | 05/11/2023 | WG | K |
| MW-3S-20230511 | N | 2305259-004A | 05/11/2023 | WG | J |
| MW-3S-20230511 | N | 2305259-004B | 05/11/2023 | WG | K |
| MW-4S-20230511 | N | 2305259-005A | 05/11/2023 | WG | J |
| MW-4S-20230511 | N | 2305259-005B | 05/11/2023 | WG | K |

| Method Holding Times | | | |
|---|---|---|---|
| A. | E1631E | Mercury | 28 days preserved; 48 hours unpreserved |
| B. | NWTPH-DX | Total Petroleum Hydrocarbons (TPH) Total Diesel | 14 days for liquid, preserved 7 days for liquid unpreserved |
| C. | NWTPH-GX | Total Petroleum Hydrocarbons (TPH) Total Diesel | 14 days for liquid, preserved 7 days for liquid unpreserved |
| D. | SM2540D | Total Suspended Solids | 7 days |
| E. | SW6020B | Metals | 180 days for liquid |
| F. | SW8260D | Volatile Organic Compounds (VOCs) | 14 days for liquid, preserved 7 days for liquid unpreserved |
| G. | SW8270E | Polycyclic Aromatic Hydrocarbons (PAHs) | 7 days extraction / 40 days analysis for liquid |
| H. | NWTPH-VPH | VPH Fractions | 14 days preserved; 7 days unpreserved |
| I. | SW8021B | VOCs | 14 days |
| J. | NWEPH | Extractable Petroleum Hydrocarbon (EPH) Fractions | 14 days preserved; 7 days unpreserved |
| K. | SM3500-CR B | Hexavalent Chromium | 24 hours |

## 2.2 CASE NARRATIVE

The laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since these additional quality control issues were not required for the project's data quality objectives, these quality control issues were not reviewed:

- SDG 305211: The calibration standard for several compounds (SW8260D) was outside of acceptance criteria. The reported values are estimates and qualified UJ: 302179-01 through 302179-09.

## 2.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol with the following exceptions:

| Method | Matrix | Holding Time | Preservation | Sample ID, Violation, Qualification |
|---|---|---|---|---|
| SM3500-CR B | Water | 24 hours | Cool to ≤ 6 °C | The following samples were analyzed outside the holding time and qualified UJ: MW-1S-20230511, MW-2S-20230511, MW-2SD-20230511 |

## 2.4 REPORTING LIMITS AND SAMPLE DILUTIONS

The RLs for the samples within this SDG met or were below the minimum reporting limit (RL) requirements specified by the project specific QAPP with the following exceptions:

| Sample ID | Lab ID | Analyte/ Method | Dilution Factor |
|---|---|---|---|
| All samples | All samples | 2-Butanone (MEK) | 1x |
| All samples | All samples | Acetone | 1x |
| All samples | All samples | Bromomethane | 1x |
| All samples | All samples | Bromoform | 1x |
| All samples | All samples | Hexane | 1x |
| All samples | All samples | Methyl t-butyl ether (MTBE) | 1x |
| MW-3S-20230511 | 305211-04 | Nickel | 5x |
| All samples | All samples | Hexavalent Chromium | 1x |
| MW-3S-20230511 | 305211-04 | Chromium | 5x |
| MW-3S-20230511 | 305211-04 | Copper | 5x |
| MW-3S-20230511 | 305211-04 | Zinc | 5x |

## 2.5 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified quality control (QC) limits.

## 2.6 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples (LCS) analyses associated with client samples exhibited recoveries and relative percent differences (RPDs) within the specified limits.

## 2.7 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) below were used for matrix spike/matrix spike duplicate (MS/MSD):

| Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method(s) |
|---|---|---|
| 305211-05 | 305211-05(Matrix Spike) | 1631E |
| 305211-02 | 305211-02(Matrix Spike) | 1631E |
| 305211-01 | 305211-01(Matrix Spike) | SW8260D |
| 2305259-001 | 2305259-001BMS/BMSD | SM3500 Cr |
| 2305-148-01 | SB0519W1 | SM8021B |

The MS/MSD recoveries and the relative percent difference (RPD) between the MS and MSD results were within the specified limits.

## 2.8 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

## 2.9 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The following sample(s) were used for laboratory duplicate analysis and the RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL): [

| Lab Sample Number | Laboratory Duplicate Sample Client ID | Method(s) |
|---|---|---|
| MW-1S-20230511 | 2305259-001BDUP | SM3500 Cr |
| MW-2SD-20230511 | 2305262-003ADUP | NWEPH |

The following sample(s) were used for field duplicate analysis. The RPD comparison for detections in either the parent or duplicate sample(s) is shown below. RPDs were all below 35 percent for water (or the absolute difference rule was satisfied if detects were less than 5 times the RL). Any exceptions are noted below and qualified.

| Primary Sample ID | Duplicate Sample ID | Method(s) |
|---|---|---|
| MW-2S-20230511 | MW-2SD-20230511 | A, B, C, D, E, F, G, H, I, J, K |

**Field Duplicate RPD Calculations:**

| Method(s): NWEPH | | | | |
|---|---|---|---|---|
| Analyte (µg/L) | Primary Sample ID | Duplicate Sample ID | % RPD | Qualification |
| | MW-2S-20230511 | MW-2SD-20230511 | | |
| Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | 87.7 | 39.5 U | NA | J/UJ, Abs Diff > RL |

## 2.10 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the DQOs for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable as no data was rejected. A summary of qualifiers applied to this data set is shown in Table E-13.

## 3. Precision and Accuracy [for SDG(s) above]

Refer to section E 1.7. Where required by the method, some measurement of analytical accuracy and precision was reported for each method with the site samples, with the following exceptions:

## 4. Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.1 Reporting Basis (Wet/Dry)
  - Soil samples can be reported on either a wet (as received) or dry weight basis. Dry weight data indicate calculations were made to compensate for the moisture content of the soil sample.
  - Percent (%) solids should be appropriately considered when evaluating analytical results for non-aqueous samples. Sediments with high moisture content may or may not be successfully analyzed by routine analytical methods. Samples should have greater than or equal to 30 percent solids to be appropriately quantified.
- E 1.2 Surrogate Recovery Compliance
  - Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to sample preparation to determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds.
- E 1.3 Laboratory Control Samples
  - The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
  - Field blanks are prepared to identify contamination that may have been introduced during field activity. Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. Trip blanks are prepared when volatile analysis is requested to identify contamination that may have been introduced during transport.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.

  - The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The relative percent difference (RPD) or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.

- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the relative percent difference (RPD) found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.
  - Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the percent recovery (%R) of certain spiked compounds. This can be assessed using LCS, blank spike (BS), MS, and/or surrogate recoveries.

# 5. Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg microgram per kilogram
  - µg/L microgram per liter
  - µg/$m^3$ microgram per cubic meter
  - mg/kg milligram per kilogram
  - mg/L milligram per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - SSV Sub-slab Vapor
  - WQ Water Quality control matrix
  - WS Surface Water
- Table Footnotes:
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Common Symbols:
  - % percent
  - < less than
  - ≤ less than or equal to
  - > greater than
  - ≥ greater than or equal to
  - = equal
  - °C degrees Celsius
  - ± plus or minus
  - ~ approximately
  - x times (multiplier)

# 6. Abbreviations

| | |
|---|---|
| %D | Percent Difference |
| %R | Percent Recovery |
| %RSD | Percent Relative Standard Deviation |
| %v/v | Percent volume by volume |
| 2s | 2 sigma |
| 4,4-DDT | 4 4-dichlorodiphenyltrichloroethane |
| Abs Diff | Absolute Difference |
| amu | atomic mass unit |
| BPJ | Best Professional Judgement |
| BS | Blank Spike |
| CCB | Continuing Calibration Blank |
| CCV | Continuing Calibration Verification |
| CCVL | Continuing Calibration Verification Low |
| COC | Chain of Custody |
| COM | Combined Isotope Calculation |
| Cr (VI) | Hexavalent Chromium |
| CRI | Collision Reaction Interface |
| DoD | Department of Defense |
| DQO | data quality objective |
| DUSR | Data Usability Summary Report |
| EMPC | Estimated Maximum Possible Concentration |
| FBK | Field Blank Contamination |
| FDP | Field Duplicate |
| GC | Gas Chromatograph |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| GPC | Gel Permeation Chromatography |
| $H_2$ | Hydrogen gas |
| HCl | Hydrochloric Acid |
| ICAL | Initial Calibration |
| ICB | Initial Calibration Blank |
| ICP/MS | Inductively Coupled Plasma/ Mass Spectrometry |
| ICV | Initial Calibration Verification |
| ICVL | Initial Calibration Verification Low |
| IPA | Isopropyl Alcohol |
| LC | Laboratory Control |
| LCS/LCSD | Laboratory Control Sample/Laboratory Control Sample Duplicate |
| MBK | Method Blank Contamination |
| MDC | Minimum Detectable Concentration |
| MDL | Laboratory Method Detection Limit |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | not applicable |
| ND | Non-Detect |
| NFG | National Functional Guidelines |
| $NH_3$ | Ammonia |
| NYSDEC | New York State Department of Environmental Conservation |
| PAH | polycyclic aromatic hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PDS | Post Digestion Spike |
| PEM | Performance Evaluation Mixture |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFBA | Perfluorbutanoic Acid |
| PFD | Perfluorodecalin |
| PFOA | Perfluorooctanoic Acid |
| PFOS | Perfluorooctane sulfonate |
| PFPeA | Perfluoropentanoic Acid |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QSM | Quality Systems Manual |
| $R^2$ | R-squared value |
| Ra-226 | Radium-226 |
| Ra-228 | Radium-228 |
| RESC | Resolution Check Measure |
| RL | Laboratory Reporting Limit |
| RPD | Relative Percent Difference |
| RRF | Relative Response Factors |
| RT | Retention Time |
| SAP | sampling analysis plan |
| SDG | Sample Delivery Group |
| SIM | Selected ion monitoring |
| SOP | Laboratory Standard Operating Procedures |
| SPE | Solid Phase Extraction |
| SVOC | Semi-Volatile Organic Compounds |
| TCLP | Toxicity Characteristic Leaching Procedure |
| TIC | Tentatively Identified Compound |
| TKN | Total Kjeldahl Nitrogen |
| TPH | Total Petroleum Hydrocarbon |
| TPU | Total Propagated Uncertainty |
| amu | atomic mass unit |
| USEPA | U.S. Environmental Protection Agency |
| VOC | Volatile Organic Compounds |
| WP | Work Plan |

# 7. Qualifiers

The qualifiers below are from the USEPA National Functional Guidelines and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:

  U The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".

  B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers:

  E The compound was quantitated above the calibration range.

  D The concentration is based on a diluted sample analysis.

- Validation Qualifiers:

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  J/UJ as listed in exception tables J applies to detected data and UJ applies to non-detected data as reported by the laboratory.

  UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

  NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.

  R The sample results were rejected as unusable; the compound may or may not be present in the sample.

  S Result is suspect. See DUSR for details.

## References


1. Haley & Aldrich, Inc, 2021. Quality Assurance Project Plan. Remedial Investigation Work Plan. Kosmos Mill Oil Cleanup. Site Code: 19499-02. Seattle Washington. December 2021.
2. United States Environmental Protection Agency (USEPA), 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January 2017.
3. USEPA, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January 2017.

**TABLE E-13**
**SYSTEM PERFORMANCE**
KOSMOS MILL
MORTON, WASHINGTON

| SDG | Method | Basis | Sample ID | Lab ID | Analyte | Fraction | Reportable Result | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| 305211 | SW8260D | NA | MW-1S-20230511 | 305211-01 | 2,2-Dichloropropane | T | Yes | U | UJ | EXE |
| 305211 | SW8260D | NA | MW-1S-20230511 | 305211-01 | 2-Butanone (Methyl Ethyl Ketone) | T | Yes | U | UJ | EXE |
| 305211 | SW8260D | NA | MW-1S-20230511 | 305211-01 | Acetone | T | Yes | U | UJ | EXE |
| 305211 | SW8260D | NA | MW-1S-20230511 | 305211-01 | Dichlorodifluoromethane (CFC-12) | T | Yes | U | UJ | EXE |
| 305211 | SW8260D | NA | MW-2S-20230511 | 305211-02 | Carbon tetrachloride | T | Yes | U | UJ | EXE |
| 305211 | SW8260D | NA | MW-2SD-20230511 | 305211-03 | Carbon tetrachloride | T | Yes | U | UJ | EXE |
| 305211 | SW8260D | NA | MW-3S-20230511 | 305211-04 | Carbon tetrachloride | T | Yes | U | UJ | EXE |
| 305211 | SW8260D | NA | MW-4S-20230511 | 305211-05 | Carbon tetrachloride | T | Yes | U | UJ | EXE |
| 305211 (2305259) | NWEPH | NA | MW-2S-20230511 | 2305259-002A | Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | N | Yes | U | UJ | FDP |
| 305211 (2305259) | NWEPH | NA | MW-2SD-20230511 | 2305259-003A | Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | N | Yes | U | UJ | FDP |
| 305211 (2305259) | NWEPH | NA | MW-2SD-20230511 | 2305259-003A | Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | N | Yes | U | UJ | FDP |
| 305211 (2305259) | NWEPH | NA | MW-2S-20230511 | 2305259-002A | Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | N | Yes | 87.7 | 87.7 J | FDP |
| 305211 (2305259) | SM3500-CR B | NA | MW-1S-20230511 | 2305259-001B | Chromium VI (Hexavalent) | N | Yes | U | UJ | HTQ |
| 305211 (2305259) | SM3500-CR B | NA | MW-2S-20230511 | 2305259-002B | Chromium VI (Hexavalent) | N | Yes | U | UJ | HTQ |
| 305211 (2305259) | SM3500-CR B | Wet | MW-1S-20230511 | 2305259-001BDUP | Chromium VI (Hexavalent) | N | Yes | U | UJ | HTQ |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Chloro-octadecane | N | Yes | 135 | 135 J | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Extractable Petroleum Hydrocarbons (C10-C12) Aliphatic | N | Yes | U | UJ | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Extractable Petroleum Hydrocarbons (C10-C12) Aromatic | N | Yes | U | UJ | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Extractable Petroleum Hydrocarbons (C12-C16) Aliphatic | N | Yes | 82.7 | 82.7 J | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Extractable Petroleum Hydrocarbons (C12-C16) Aromatic | N | Yes | U | UJ | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Extractable Petroleum Hydrocarbons (C16-C21) Aliphatic | N | Yes | 77.6 | 77.6 J | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Extractable Petroleum Hydrocarbons (C16-C21) Aromatic | N | Yes | U | UJ | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Extractable Petroleum Hydrocarbons (C21-C34) Aliphatic | N | Yes | 117 | 117 J | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Extractable Petroleum Hydrocarbons (C21-C34) Aromatic | N | Yes | U | UJ | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Extractable Petroleum Hydrocarbons (C8-C10) Aliphatic | N | Yes | 120 | 120 J | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | Extractable Petroleum Hydrocarbons (C8-C10) Aromatic | N | Yes | 184 | 184 J | SUR |
| 305192 (2305262) | NWEPH | NA | MW-2D-20230510 | 2305262-002A | o-Terphenyl | N | Yes | 586 | 586 J | SUR |

**Notes**
HTQ = Holding time exceedance.
SUR = Surrogate percent recovery outside the specified limits.
FDP = Field duplicate qualifier due to an exceedance of the specified limits.
EXE = Result exceeds the calibration range.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
U = The compound was analyzed for but not detected.
UJ = The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

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June 6, 2023

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on May 11, 2023 from the Kosmos 0202832-001, F&BI 305192 project. There are 39 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data, Andrew Nakahara
HNA0606R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on May 11, 2023 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos, F&BI 305192 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 305192 -01 | MW-1D |
| 305192 -02 | MW-2D |
| 305192 -03 | MW-3D |
| 305192 -04 | MW-4D |
| 305192 -05 | Trip Blank |

The samples were sent to Fremont Analytical for hexavalent chromium and EPH analyses. In addition, the samples were sent to Onsite Environmental for VPH analysis. The reports are enclosed.

All quality control requirements were acceptable.

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192
Date Extracted: 05/12/23
Date Analyzed: 05/12/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| MW-1D<br>305192-01 | <100 | 104 |
| MW-2D<br>305192-02 | <100 | 104 |
| MW-3D<br>305192-03 | <100 | 108 |
| MW-4D<br>305192-04 | <100 | 106 |
| Method Blank<br>03-955 MB | <100 | 108 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192
Date Extracted: 05/11/23
Date Analyzed: 05/11/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 41-152) |
|---|---|---|---|
| MW-1D<br>305192-01 1/1.2 | <60 | <300 | 115 |
| MW-2D<br>305192-02 1/1.2 | <60 | <300 | 128 |
| MW-3D<br>305192-03 | <50 | <250 | 109 |
| MW-4D<br>305192-04 1/1.3 | <65 | <320 | 125 |
| Method Blank<br>03-1153 MB2 | <50 | <250 | 109 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-01 |
| Date Analyzed: | 05/11/23 | Data File: | 305192-01.135 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.50 |
| Cadmium | <1 |
| Chromium | 1.10 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 2.61 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-02 |
| Date Analyzed: | 05/11/23 | Data File: | 305192-02.136 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.28 |
| Cadmium | <1 |
| Chromium | 1.10 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 1.47 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-03 |
| Date Analyzed: | 05/11/23 | Data File: | 305192-03.137 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 1.01 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-04 |
| Date Analyzed: | 05/11/23 | Data File: | 305192-04.138 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | I3-377 mb |
| Date Analyzed: | 05/11/23 | Data File: | I3-377 mb.125 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-01 |
| Date Analyzed: | 05/11/23 | Data File: | 305192-01.148 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | 1.65 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 1.96 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-02 |
| Date Analyzed: | 05/11/23 | Data File: | 305192-02.149 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.89 |
| Cadmium | <1 |
| Chromium | 1.81 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 1.98 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-03 |
| Date Analyzed: | 05/11/23 | Data File: | 305192-03.150 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.18 |
| Cadmium | <1 |
| Chromium | 1.07 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 1.27 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-04 |
| Date Analyzed: | 05/11/23 | Data File: | 305192-04.151 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.86 |
| Cadmium | <1 |
| Chromium | 2.51 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | 1.40 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | I3-377 mb |
| Date Analyzed: | 05/11/23 | Data File: | I3-377 mb.125 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Mercury | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192
Date Extracted: 05/11/23
Date Analyzed: 05/16/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Dissolved Mercury |
|---|---|
| MW-1D<br>305192-01 | <0.01 |
| MW-2D<br>305192-02 | <0.01 |
| MW-3D<br>305192-03 | <0.01 |
| MW-4D<br>305192-04 | <0.01 |
| Method Blank<br>I3-380 MB | <0.01 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192
Date Extracted: 05/11/23
Date Analyzed: 05/16/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| MW-1D<br>305192-01 | <0.01 |
| MW-2D<br>305192-02 | <0.01 |
| MW-3D<br>305192-03 | <0.01 |
| MW-4D<br>305192-04 | <0.01 |
| Method Blank<br>I3-380 MB | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-01 |
| Date Analyzed: | 05/11/23 | Data File: | 051119.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 78 | 126 |
| Toluene-d8 | 99 | 84 | 115 |
| 4-Bromofluorobenzene | 101 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-02 |
| Date Analyzed: | 05/11/23 | Data File: | 051120.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 78 | 126 |
| Toluene-d8 | 101 | 84 | 115 |
| 4-Bromofluorobenzene | 105 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-03 |
| Date Analyzed: | 05/11/23 | Data File: | 051121.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 78 | 126 |
| Toluene-d8 | 99 | 84 | 115 |
| 4-Bromofluorobenzene | 102 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-04 |
| Date Analyzed: | 05/11/23 | Data File: | 051122.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 113 | 78 | 126 |
| Toluene-d8 | 101 | 84 | 115 |
| 4-Bromofluorobenzene | 102 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 03-1087 mb |
| Date Analyzed: | 05/11/23 | Data File: | 051107.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | 71 | 132 |
| Toluene-d8 | 92 | 68 | 139 |
| 4-Bromofluorobenzene | 88 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 k | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-01 |
| Date Analyzed: | 05/12/23 | Data File: | 051141.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 82 | 11 | 173 |
| 2-Fluorobiphenyl | 87 | 25 | 128 |
| 2,4,6-Tribromophenol | 86 | 10 | 140 |
| Terphenyl-d14 | 102 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-02 |
| Date Analyzed: | 05/12/23 | Data File: | 051142.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 96 | 11 | 173 |
| 2-Fluorobiphenyl | 84 | 25 | 128 |
| 2,4,6-Tribromophenol | 91 | 10 | 140 |
| Terphenyl-d14 | 108 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 305192-03 |
| Date Analyzed: | 05/12/23 | Data File: | 051143.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 80 | 11 | 173 |
| 2-Fluorobiphenyl | 82 | 25 | 128 |
| 2,4,6-Tribromophenol | 83 | 10 | 140 |
| Terphenyl-d14 | 102 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/11/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/23 | Lab ID: | 305192-04 |
| Date Analyzed: | 05/18/23 | Data File: | 051807.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 77 | 11 | 173 |
| 2-Fluorobiphenyl | 75 | 25 | 128 |
| 2,4,6-Tribromophenol | 82 | 10 | 140 |
| Terphenyl-d14 | 86 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/23 | Lab ID: | 03-1165 mb2 |
| Date Analyzed: | 05/16/23 | Data File: | 051605.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | MG |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 68 | 11 | 173 |
| 2-Fluorobiphenyl | 75 | 25 | 128 |
| 2,4,6-Tribromophenol | 81 | 10 | 140 |
| Terphenyl-d14 | 95 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/11/23 | Lab ID: | 03-1155 mb2 |
| Date Analyzed: | 05/11/23 | Data File: | 051132.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 67 | 11 | 173 |
| 2-Fluorobiphenyl | 76 | 25 | 128 |
| 2,4,6-Tribromophenol | 73 | 10 | 140 |
| Terphenyl-d14 | 101 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192
Date Extracted: 05/16/23
Date Analyzed: 05/17/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| MW-1D<br>305192-01 | <5 |
| MW-2D<br>305192-02 | 6.4 |
| MW-3D<br>305192-03 | <5 |
| MW-4D<br>305192-04 | <5 |
| Method Blank<br>I3-393 MB | <5 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 305192-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 100 | 70-130 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 92 | 84 | 65-151 | 9 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 305192-04 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 95 | 95 | 75-125 | 0 |
| Barium | ug/L (ppb) | 50 | <1 | 96 | 95 | 75-125 | 1 |
| Cadmium | ug/L (ppb) | 5 | <1 | 98 | 97 | 75-125 | 1 |
| Chromium | ug/L (ppb) | 20 | <1 | 101 | 98 | 75-125 | 3 |
| Copper | ug/L (ppb) | 20 | <5 | 97 | 97 | 75-125 | 0 |
| Lead | ug/L (ppb) | 10 | <1 | 100 | 99 | 75-125 | 1 |
| Mercury | ug/L (ppb) | 5 | <1 | 109 | 110 | 75-125 | 1 |
| Nickel | ug/L (ppb) | 20 | <1 | 99 | 97 | 75-125 | 2 |
| Selenium | ug/L (ppb) | 5 | <1 | 97 | 98 | 75-125 | 1 |
| Silver | ug/L (ppb) | 5 | <1 | 95 | 93 | 75-125 | 2 |
| Zinc | ug/L (ppb) | 50 | <5 | 94 | 95 | 75-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 86 | 80-120 |
| Barium | ug/L (ppb) | 50 | 97 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 99 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 95 | 80-120 |
| Copper | ug/L (ppb) | 20 | 99 | 80-120 |
| Lead | ug/L (ppb) | 10 | 99 | 80-120 |
| Mercury | ug/L (ppb) | 5 | 109 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 89 | 80-120 |
| Silver | ug/L (ppb) | 5 | 95 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 305192-04 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 95 | 95 | 75-125 | 0 |
| Barium | ug/L (ppb) | 50 | <1 | 96 | 95 | 75-125 | 1 |
| Cadmium | ug/L (ppb) | 5 | <1 | 98 | 97 | 75-125 | 1 |
| Chromium | ug/L (ppb) | 20 | <1 | 101 | 98 | 75-125 | 3 |
| Copper | ug/L (ppb) | 20 | <5 | 97 | 97 | 75-125 | 0 |
| Lead | ug/L (ppb) | 10 | <1 | 100 | 99 | 75-125 | 1 |
| Mercury | ug/L (ppb) | 5 | <1 | 109 | 110 | 75-125 | 1 |
| Nickel | ug/L (ppb) | 20 | <1 | 99 | 97 | 75-125 | 2 |
| Selenium | ug/L (ppb) | 5 | <1 | 97 | 98 | 75-125 | 1 |
| Silver | ug/L (ppb) | 5 | <1 | 95 | 93 | 75-125 | 2 |
| Zinc | ug/L (ppb) | 50 | <5 | 94 | 95 | 75-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 86 | 80-120 |
| Barium | ug/L (ppb) | 50 | 97 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 99 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 95 | 80-120 |
| Copper | ug/L (ppb) | 20 | 99 | 80-120 |
| Lead | ug/L (ppb) | 10 | 99 | 80-120 |
| Mercury | ug/L (ppb) | 5 | 109 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 89 | 80-120 |
| Silver | ug/L (ppb) | 5 | 95 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 305129-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.01 | 121 | 111 | 71-125 | 9 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 102 | 66-126 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 305129-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.01 | 121 | 111 | 71-125 | 9 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 102 | 66-126 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 305180-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | <1 | 119 | 27-164 |
| Chloromethane | ug/L (ppb) | 10 | <10 | 95 | 34-141 |
| Vinyl chloride | ug/L (ppb) | 10 | <0.02 | 111 | 16-176 |
| Bromomethane | ug/L (ppb) | 10 | <5 | 101 | 10-193 |
| Chloroethane | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | <1 | 107 | 50-150 |
| Acetone | ug/L (ppb) | 50 | <50 | 62 | 15-179 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| Hexane | ug/L (ppb) | 10 | <5 | 106 | 49-161 |
| Methylene chloride | ug/L (ppb) | 10 | <5 | 103 | 40-143 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 117 | 62-152 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| Chloroform | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | <20 | 94 | 34-168 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | <0.2 | 106 | 50-150 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| Carbon tetrachloride | ug/L (ppb) | 10 | <0.5 | 102 | 50-150 |
| Benzene | ug/L (ppb) | 10 | <0.35 | 99 | 50-150 |
| Trichloroethene | ug/L (ppb) | 10 | <0.5 | 96 | 43-133 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| Bromodichloromethane | ug/L (ppb) | 10 | <0.5 | 91 | 50-150 |
| Dibromomethane | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | <10 | 102 | 50-150 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 92 | 48-145 |
| Toluene | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 91 | 37-152 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | <0.5 | 94 | 50-150 |
| 2-Hexanone | ug/L (ppb) | 50 | <10 | 91 | 50-150 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | <1 | 92 | 50-150 |
| Tetrachloroethene | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| Dibromochloromethane | ug/L (ppb) | 10 | <0.5 | 90 | 33-164 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | <1 | 93 | 50-150 |
| Chlorobenzene | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| Ethylbenzene | ug/L (ppb) | 10 | <1 | 97 | 50-150 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | <1 | 97 | 50-150 |
| m,p-Xylene | ug/L (ppb) | 20 | <2 | 98 | 50-150 |
| o-Xylene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| Styrene | ug/L (ppb) | 10 | <1 | 95 | 50-150 |
| Isopropylbenzene | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| Bromoform | ug/L (ppb) | 10 | <5 | 93 | 23-161 |
| n-Propylbenzene | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| Bromobenzene | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | <0.2 | 99 | 57-162 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | <1 | 96 | 33-151 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| tert-Butylbenzene | ug/L (ppb) | 10 | <1 | 90 | 50-150 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 92 | 50-150 |
| sec-Butylbenzene | ug/L (ppb) | 10 | <1 | 88 | 46-139 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | <1 | 93 | 46-140 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 89 | 50-150 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | <10 | 100 | 50-150 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 95 | 50-150 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | <0.5 | 95 | 42-150 |
| Naphthalene | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 92 | 44-155 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | 128 | 123 | 49-149 | 4 |
| Chloromethane | ug/L (ppb) | 10 | 92 | 90 | 34-143 | 2 |
| Vinyl chloride | ug/L (ppb) | 10 | 109 | 110 | 43-149 | 1 |
| Bromomethane | ug/L (ppb) | 10 | 103 | 92 | 28-182 | 11 |
| Chloroethane | ug/L (ppb) | 10 | 97 | 100 | 59-157 | 3 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | 106 | 105 | 59-141 | 1 |
| Acetone | ug/L (ppb) | 50 | 68 | 70 | 20-139 | 3 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | 103 | 102 | 67-138 | 1 |
| Hexane | ug/L (ppb) | 10 | 107 | 103 | 50-161 | 4 |
| Methylene chloride | ug/L (ppb) | 10 | 100 | 101 | 29-192 | 1 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | 97 | 97 | 70-130 | 0 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | 100 | 99 | 70-130 | 1 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | 98 | 97 | 70-130 | 1 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | 110 | 115 | 71-148 | 4 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | 101 | 101 | 70-130 | 0 |
| Chloroform | ug/L (ppb) | 10 | 96 | 94 | 70-130 | 2 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 94 | 97 | 50-157 | 3 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | 103 | 104 | 70-130 | 1 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | 100 | 101 | 70-130 | 1 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | 103 | 100 | 70-130 | 3 |
| Carbon tetrachloride | ug/L (ppb) | 10 | 99 | 100 | 70-130 | 1 |
| Benzene | ug/L (ppb) | 10 | 98 | 98 | 70-130 | 0 |
| Trichloroethene | ug/L (ppb) | 10 | 93 | 93 | 70-130 | 0 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | 102 | 104 | 70-130 | 2 |
| Bromodichloromethane | ug/L (ppb) | 10 | 90 | 89 | 70-130 | 1 |
| Dibromomethane | ug/L (ppb) | 10 | 100 | 101 | 70-130 | 1 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 95 | 103 | 70-130 | 8 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | 94 | 97 | 70-130 | 3 |
| Toluene | ug/L (ppb) | 10 | 107 | 95 | 70-130 | 12 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | 104 | 90 | 70-130 | 14 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | 106 | 94 | 70-130 | 12 |
| 2-Hexanone | ug/L (ppb) | 50 | 103 | 91 | 66-132 | 12 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | 107 | 97 | 70-130 | 10 |
| Tetrachloroethene | ug/L (ppb) | 10 | 113 | 99 | 70-130 | 13 |
| Dibromochloromethane | ug/L (ppb) | 10 | 101 | 92 | 63-142 | 9 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | 97 | 94 | 70-130 | 3 |
| Chlorobenzene | ug/L (ppb) | 10 | 99 | 94 | 70-130 | 5 |
| Ethylbenzene | ug/L (ppb) | 10 | 97 | 97 | 70-130 | 0 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | 102 | 95 | 70-130 | 7 |
| m,p-Xylene | ug/L (ppb) | 20 | 102 | 98 | 70-130 | 4 |
| o-Xylene | ug/L (ppb) | 10 | 98 | 102 | 70-130 | 4 |
| Styrene | ug/L (ppb) | 10 | 89 | 94 | 70-130 | 5 |
| Isopropylbenzene | ug/L (ppb) | 10 | 98 | 93 | 70-130 | 5 |
| Bromoform | ug/L (ppb) | 10 | 102 | 93 | 50-157 | 9 |
| n-Propylbenzene | ug/L (ppb) | 10 | 84 | 93 | 70-130 | 10 |
| Bromobenzene | ug/L (ppb) | 10 | 99 | 93 | 70-130 | 6 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | 92 | 95 | 52-150 | 3 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | 99 | 96 | 75-140 | 3 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | 88 | 90 | 40-153 | 2 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | 90 | 94 | 70-130 | 4 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | 92 | 95 | 70-130 | 3 |
| tert-Butylbenzene | ug/L (ppb) | 10 | 98 | 94 | 70-130 | 4 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | 88 | 94 | 70-130 | 7 |
| sec-Butylbenzene | ug/L (ppb) | 10 | 94 | 95 | 70-130 | 1 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | 96 | 95 | 70-130 | 1 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | 99 | 94 | 70-130 | 5 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | 96 | 94 | 70-130 | 2 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | 89 | 92 | 70-130 | 3 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | 80 | 85 | 70-130 | 6 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | 90 | 93 | 70-130 | 3 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | 96 | 94 | 70-130 | 2 |
| Naphthalene | ug/L (ppb) | 10 | 85 | 89 | 61-133 | 5 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | 89 | 92 | 69-143 | 3 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 5 | 74 | 81 | 50-104 | 9 |
| 2-Methylnaphthalene | ug/L (ppb) | 5 | 88 | 98 | 52-113 | 11 |
| 1-Methylnaphthalene | ug/L (ppb) | 5 | 91 | 101 | 51-115 | 10 |
| Acenaphthylene | ug/L (ppb) | 5 | 90 | 93 | 60-114 | 3 |
| Acenaphthene | ug/L (ppb) | 5 | 90 | 93 | 57-110 | 3 |
| Fluorene | ug/L (ppb) | 5 | 97 | 101 | 61-115 | 4 |
| Phenanthrene | ug/L (ppb) | 5 | 92 | 96 | 63-113 | 4 |
| Anthracene | ug/L (ppb) | 5 | 94 | 98 | 65-117 | 4 |
| Fluoranthene | ug/L (ppb) | 5 | 90 | 97 | 68-121 | 7 |
| Pyrene | ug/L (ppb) | 5 | 103 | 101 | 62-133 | 2 |
| Benz(a)anthracene | ug/L (ppb) | 5 | 97 | 99 | 66-131 | 2 |
| Chrysene | ug/L (ppb) | 5 | 106 | 106 | 66-129 | 0 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 96 | 100 | 66-129 | 4 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 107 | 98 | 55-144 | 9 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 101 | 106 | 58-139 | 5 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 90 | 85 | 62-136 | 6 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 94 | 87 | 55-146 | 8 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 5 | 96 | 89 | 58-137 | 8 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 5 | 73 | 74 | 50-104 | 1 |
| 2-Methylnaphthalene | ug/L (ppb) | 5 | 86 | 87 | 52-113 | 1 |
| 1-Methylnaphthalene | ug/L (ppb) | 5 | 90 | 91 | 51-115 | 1 |
| Acenaphthylene | ug/L (ppb) | 5 | 88 | 89 | 60-114 | 1 |
| Acenaphthene | ug/L (ppb) | 5 | 88 | 89 | 57-110 | 1 |
| Fluorene | ug/L (ppb) | 5 | 95 | 96 | 61-115 | 1 |
| Phenanthrene | ug/L (ppb) | 5 | 92 | 93 | 63-113 | 1 |
| Anthracene | ug/L (ppb) | 5 | 95 | 95 | 65-117 | 0 |
| Fluoranthene | ug/L (ppb) | 5 | 99 | 98 | 68-121 | 1 |
| Pyrene | ug/L (ppb) | 5 | 100 | 98 | 62-133 | 2 |
| Benz(a)anthracene | ug/L (ppb) | 5 | 100 | 98 | 66-131 | 2 |
| Chrysene | ug/L (ppb) | 5 | 108 | 108 | 66-129 | 0 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 99 | 100 | 66-129 | 1 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 104 | 92 | 55-144 | 12 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 101 | 104 | 58-139 | 3 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 92 | 95 | 62-136 | 3 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 99 | 98 | 55-146 | 1 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 5 | 98 | 96 | 58-137 | 2 |

Date of Report: 06/06/23
Date Received: 05/11/23
Project: Kosmos, F&BI 305192

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: 305192-02 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| TSS | mg/L (ppm) | 6.4 | 6.8 | 6 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| TSS | mg/L (ppm) | 20 | 100 | 35-146 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

305192

# SAMPLE CHAIN OF CUSTODY

05/11/23 F4/K5/VW4

Page # 1 of 1

Report To Angie Goodwin

Company HSA

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: Cosmos

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | cPAHs | Arsenic TOTAL | TSS | TOC | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1D | 01 A-Q | 5/10/23 | 1105 | $H_2O$ | 17 | X | X | | | X | X | | X | X | X | X | No HCl analysis |
| MW-2D | 02 A-P | | 1255 | | 16 | X | X | | | X | X | | X | X | X | X | As, Ba, Cd, Cr, |
| MW-3D | 03 | | 1425 | | 16 | X | X | | | X | X | | X | X | X | X | Cu, Pb, Hg, Ni, |
| MW-4D | 04 | | 1545 | | 16 | X | X | | | X | X | | X | X | XX | X | Se, Ag, Zn, |
| Trip Blank | 05 A B | — | — | | 2 | | | | | | | | | | | | Added at lab (NP) 5/12/23 |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | Samples received at 4 °C | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Glaesman | HSA | 5/11/23 | 0600 |
| Received by: | Eric Cox | Friedman & Bruya | 5/11/23 | 9:00 |
| Relinquished by: | | | | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

**RE: 305192**
**Work Order Number: 2305262**

May 30, 2023

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 4 sample(s) on 5/11/2023 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *05/30/2023*

**CLIENT:** Friedman & Bruya
**Project:** 305192
**Work Order:** 2305262

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2305262-001 | MW-1D | 05/10/2023 11:05 AM | 05/11/2023 5:45 PM |
| 2305262-002 | MW-2D | 05/10/2023 12:55 PM | 05/11/2023 5:45 PM |
| 2305262-003 | MW-3D | 05/10/2023 2:25 PM | 05/11/2023 5:45 PM |
| 2305262-004 | MW-4D | 05/10/2023 3:45 PM | 05/11/2023 5:45 PM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

# Case Narrative

WO#: **2305262**

Date: **5/30/2023**

**CLIENT:** Friedman & Bruya
**Project:** 305192

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2305262**
Date Reported: **5/30/2023**

**CLIENT:** Friedman & Bruya
**Project:** 305192

**Lab ID:** 2305262-001 **Collection Date:** 5/10/2023 11:05:00 AM
**Client Sample ID:** **MW-1D** **Matrix:** Water

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 40335 | | Analyst: SK |
| Aliphatic Hydrocarbon (C8-C10) | 109 | 79.4 | | µg/L | 1 | 5/25/2023 2:15:46 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.7 | | µg/L | 1 | 5/25/2023 2:15:46 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.7 | | µg/L | 1 | 5/25/2023 2:15:46 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.7 | | µg/L | 1 | 5/25/2023 2:15:46 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.7 | | µg/L | 1 | 5/25/2023 2:15:46 PM |
| Aromatic Hydrocarbon (C8-C10) | 176 | 79.4 | | µg/L | 1 | 5/26/2023 3:12:27 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.7 | | µg/L | 1 | 5/26/2023 3:12:27 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.7 | | µg/L | 1 | 5/26/2023 3:12:27 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.7 | | µg/L | 1 | 5/26/2023 3:12:27 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.7 | | µg/L | 1 | 5/26/2023 3:12:27 PM |
| Surr: 1-Chlorooctadecane | 85.8 | 50 - 150 | | %Rec | 1 | 5/25/2023 2:15:46 PM |
| Surr: o-Terphenyl | 114 | 50 - 150 | | %Rec | 1 | 5/26/2023 3:12:27 PM |

**Lab ID:** 2305262-002 **Collection Date:** 5/10/2023 12:55:00 PM
**Client Sample ID:** **MW-2D** **Matrix:** Water

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 40335 | | Analyst: SK |
| Aliphatic Hydrocarbon (C8-C10) | 120 | 79.3 | | µg/L | 1 | 5/25/2023 5:21:00 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.6 | | µg/L | 1 | 5/25/2023 5:21:00 PM |
| Aliphatic Hydrocarbon (C12-C16) | 82.7 | 39.6 | | µg/L | 1 | 5/25/2023 5:21:00 PM |
| Aliphatic Hydrocarbon (C16-C21) | 77.6 | 39.6 | | µg/L | 1 | 5/25/2023 5:21:00 PM |
| Aliphatic Hydrocarbon (C21-C34) | 117 | 39.6 | | µg/L | 1 | 5/25/2023 5:21:00 PM |
| Aromatic Hydrocarbon (C8-C10) | 184 | 79.3 | | µg/L | 1 | 5/26/2023 3:35:32 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.6 | | µg/L | 1 | 5/26/2023 3:35:32 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.6 | | µg/L | 1 | 5/26/2023 3:35:32 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.6 | | µg/L | 1 | 5/26/2023 3:35:32 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.6 | | µg/L | 1 | 5/26/2023 3:35:32 PM |
| Surr: 1-Chlorooctadecane | 34.1 | 50 - 150 | S | %Rec | 1 | 5/25/2023 5:21:00 PM |
| Surr: o-Terphenyl | 148 | 50 - 150 | | %Rec | 1 | 5/26/2023 3:35:32 PM |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.

# Analytical Report

Work Order: **2305262**
Date Reported: **5/30/2023**

**CLIENT:** Friedman & Bruya
**Project:** 305192

**Lab ID:** 2305262-003 **Collection Date:** 5/10/2023 2:25:00 PM
**Client Sample ID:** **MW-3D** **Matrix:** Water

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 40335 | | Analyst: SK |
| Aliphatic Hydrocarbon (C8-C10) | ND | 98.1 | | µg/L | 1 | 5/19/2023 2:35:05 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 49.1 | | µg/L | 1 | 5/19/2023 2:35:05 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 49.1 | | µg/L | 1 | 5/19/2023 2:35:05 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 49.1 | | µg/L | 1 | 5/19/2023 2:35:05 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 49.1 | | µg/L | 1 | 5/19/2023 2:35:05 PM |
| Aromatic Hydrocarbon (C8-C10) | 102 | 98.1 | | µg/L | 1 | 5/16/2023 11:35:28 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 49.1 | | µg/L | 1 | 5/16/2023 11:35:28 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 49.1 | | µg/L | 1 | 5/16/2023 11:35:28 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 49.1 | | µg/L | 1 | 5/16/2023 11:35:28 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 49.1 | | µg/L | 1 | 5/16/2023 11:35:28 PM |
| Surr: 1-Chlorooctadecane | 63.8 | 50 - 150 | | %Rec | 1 | 5/19/2023 2:35:05 PM |
| Surr: o-Terphenyl | 92.3 | 50 - 150 | | %Rec | 1 | 5/16/2023 11:35:28 PM |

**Lab ID:** 2305262-004 **Collection Date:** 5/10/2023 3:45:00 PM
**Client Sample ID:** **MW-4D** **Matrix:** Water

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 40335 | | Analyst: SK |
| Aliphatic Hydrocarbon (C8-C10) | 116 | 79.7 | | µg/L | 1 | 5/25/2023 3:02:11 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.9 | | µg/L | 1 | 5/25/2023 3:02:11 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.9 | | µg/L | 1 | 5/25/2023 3:02:11 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.9 | | µg/L | 1 | 5/25/2023 3:02:11 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.9 | | µg/L | 1 | 5/25/2023 3:02:11 PM |
| Aromatic Hydrocarbon (C8-C10) | 125 | 79.7 | | µg/L | 1 | 5/25/2023 8:51:15 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.9 | | µg/L | 1 | 5/25/2023 8:51:15 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.9 | | µg/L | 1 | 5/25/2023 8:51:15 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.9 | | µg/L | 1 | 5/25/2023 8:51:15 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.9 | | µg/L | 1 | 5/25/2023 8:51:15 PM |
| Surr: 1-Chlorooctadecane | 61.1 | 50 - 150 | | %Rec | 1 | 5/25/2023 3:02:11 PM |
| Surr: o-Terphenyl | 114 | 50 - 150 | | %Rec | 1 | 5/25/2023 8:51:15 PM |

**Work Order:** 2305262
**CLIENT:** Friedman & Bruya
**Project:** 305192

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-40335** SampType: **MBLK** Units: **µg/L** Prep Date: **5/12/2023** RunNo: **84289**
Client ID: **MBLKW** Batch ID: **40335** Analysis Date: **5/16/2023** SeqNo: **1758707**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 79.3 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.6 | | 0 | 0 | | | | | | |
| Surr: o-Terphenyl | 314 | | 396.5 | | 79.2 | 50 | 150 | | | | |

Sample ID: **LCS-40335** SampType: **LCS** Units: **µg/L** Prep Date: **5/12/2023** RunNo: **84289**
Client ID: **LCSW** Batch ID: **40335** Analysis Date: **5/16/2023** SeqNo: **1758708**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 405 | 79.2 | 989.7 | 0 | 40.9 | 23.9 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 294 | 39.6 | 494.8 | 0 | 59.5 | 41.8 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 351 | 39.6 | 494.8 | 0 | 70.9 | 36.7 | 113 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 356 | 39.6 | 494.8 | 0 | 72.0 | 52.2 | 124 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 513 | 39.6 | 494.8 | 0 | 104 | 50.5 | 139 | | | | |
| Surr: o-Terphenyl | 343 | | 395.9 | | 86.7 | 50 | 150 | | | | |

Sample ID: **2305262-003ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **5/12/2023** RunNo: **84289**
Client ID: **MW-3D** Batch ID: **40335** Analysis Date: **5/16/2023** SeqNo: **1758711**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 98.9 | | 0 | 0 | | | 102.0 | 3.41 | 25 | |
| Aromatic Hydrocarbon (C10-C12) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C12-C16) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C16-C21) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C21-C34) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Surr: o-Terphenyl | 423 | | 494.4 | | 85.6 | 50 | 150 | | 0 | | |

**Work Order:** 2305262
**CLIENT:** Friedman & Bruya
**Project:** 305192

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-40335** SampType: **MBLK** Units: **µg/L** Prep Date: **5/12/2023** RunNo: **84289**
Client ID: **MBLKW** Batch ID: **40335** Analysis Date: **5/19/2023** SeqNo: **1758648**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.3 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.6 | | 0 | 0 | | | | | | |
| Surr: 1-Chlorooctadecane | 266 | | 396.5 | | 67.1 | 50 | 150 | | | | |

Sample ID: **LCS-40335** SampType: **LCS** Units: **µg/L** Prep Date: **5/12/2023** RunNo: **84289**
Client ID: **LCSW** Batch ID: **40335** Analysis Date: **5/19/2023** SeqNo: **1758649**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 458 | 79.2 | 989.7 | 0 | 46.2 | 15.3 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 254 | 39.6 | 494.8 | 0 | 51.3 | 32.2 | 130 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 319 | 39.6 | 494.8 | 0 | 64.5 | 41 | 106 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 307 | 39.6 | 494.8 | 0 | 62.1 | 47.9 | 103 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 261 | 39.6 | 494.8 | 0 | 52.6 | 33.4 | 142 | | | | |
| Surr: 1-Chlorooctadecane | 269 | | 395.9 | | 68.0 | 50 | 150 | | | | |

Sample ID: **2305262-003ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **5/12/2023** RunNo: **84289**
Client ID: **MW-3D** Batch ID: **40335** Analysis Date: **5/19/2023** SeqNo: **1758651**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 98.9 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Surr: 1-Chlorooctadecane | 303 | | 494.4 | | 61.3 | 50 | 150 | | 0 | | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | **FB** | Work Order Number: | **2305262** |
| Logged by: | **Morgan Wilson** | Date Received: | **5/11/2023 5:45:00 PM** |

## Chain of Custody

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes | ☑ | No ☐ | Not Present | ☐ |
| 2. | How was the sample delivered? | Client | | | | |

## Log In

| | | | | | | |
|---|---|---|---|---|---|---|
| 3. | Coolers are present? | Yes | ☑ | No ☐ | NA | ☐ |
| 4. | Shipping container/cooler in good condition? | Yes | ☑ | No ☐ | | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes | ☐ | No ☐ | Not Present | ☑ |
| 6. | Was an attempt made to cool the samples? | Yes | ☑ | No ☐ | NA | ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes | ☑ | No ☐ | NA | ☐ |
| 8. | Sample(s) in proper container(s)? | Yes | ☑ | No ☐ | | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes | ☑ | No ☐ | | |
| 10. | Are samples properly preserved? | Yes | ☑ | No ☐ | | |
| 11. | Was preservative added to bottles? | Yes | ☐ | No ☑ | NA | ☐ |
| 12. | Is there headspace in the VOA vials? | Yes | ☐ | No ☐ | NA | ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes | ☑ | No ☐ | | |
| 14. | Does paperwork match bottle labels? | Yes | ☑ | No ☐ | | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes | ☑ | No ☐ | | |
| 16. | Is it clear what analyses were requested? | Yes | ☑ | No ☐ | | |
| 17. | Were all holding times able to be met? | Yes | ☑ | No ☐ | | |

## Special Handling (if applicable)

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes | ☐ | No ☐ | NA | ☑ |

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

19. Additional remarks:

**Item Information**

| Item # | Temp ºC |
|---|---|
| Sample | 1.2 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2305262



Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

| SUBCONTRACTER Fremont | |
|---|---|
| PROJECT NAME/NO. 305192 | PO # D-297 |
| REMARKS EIM and EQuIS4 EDDs | |

TURNAROUND TIME
☒ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions



| | | | | | | ANALYSES REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | EPH | VPH | BOD | Chloride | Sulfate | Sulfide | | | | | Notes |
| MW-1D | | 5/10/2023 | 1105 | water | 1 | x | | | | | | | | | | |
| MW-2D | | 5/10/2023 | 1255 | water | 1 | x | | | | | | | | | | |
| MW-3D | | 5/10/2023 | 1425 | water | 1 | x | | | | | | | | | | |
| MW-4D | | 5/10/2023 | 1545 | water | 1 | x | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 5/11/23 | 1000AM |
| Received by: | | Nate R | FAL | 5/11/23 | 17:45 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

**RE:**
**Work Order Number: 2305230**

May 18, 2023

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 4 sample(s) on 5/11/2023 for the analyses presented in the following report.

***Hexavalent Chromium by SM 3500 Cr B***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *05/18/2023*

**CLIENT:** Friedman & Bruya
**Project:**
**Work Order:** 2305230

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2305230-001 | MW-1D | 05/10/2023 11:05 AM | 05/11/2023 9:30 AM |
| 2305230-002 | MW-2D | 05/10/2023 12:55 PM | 05/11/2023 9:30 AM |
| 2305230-003 | MW-3D | 05/10/2023 2:25 PM | 05/11/2023 9:30 AM |
| 2305230-004 | MW-4D | 05/10/2023 3:45 PM | 05/11/2023 9:30 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

# Case Narrative

WO#: **2305230**
Date: **5/18/2023**

**CLIENT:** Friedman & Bruya
**Project:**

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

**CLIENT:** Friedman & Bruya
**Project:**

**Lab ID:** 2305230-001 **Collection Date:** 5/10/2023 11:05:00 AM
**Client Sample ID:** **MW-1D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R83910 | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 5/11/2023 10:44:00 AM |

**Lab ID:** 2305230-002 **Collection Date:** 5/10/2023 12:55:00 PM
**Client Sample ID:** **MW-2D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R83910 | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 5/11/2023 11:03:00 AM |

**Lab ID:** 2305230-003 **Collection Date:** 5/10/2023 2:25:00 PM
**Client Sample ID:** **MW-3D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R83910 | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 5/11/2023 11:08:00 AM |

**Lab ID:** 2305230-004 **Collection Date:** 5/10/2023 3:45:00 PM
**Client Sample ID:** **MW-4D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R83910 | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 5/11/2023 11:13:00 AM |

**Work Order:** 2305230
**CLIENT:** Friedman & Bruya
**Project:**

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **MB-83910** | SampType: **MBLK** | | | Units: **mg/L** | | Prep Date: **5/11/2023** | | RunNo: **83910** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R83910** | | | | | Analysis Date: **5/11/2023** | | SeqNo: **1750372** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | | | | |

| Sample ID: **LCS-83910** | SampType: **LCS** | | | Units: **mg/L** | | Prep Date: **5/11/2023** | | RunNo: **83910** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R83910** | | | | | Analysis Date: **5/11/2023** | | SeqNo: **1750373** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.243 | 0.0500 | 0.2500 | 0 | 97.2 | 84.9 | 112 | | | | |

| Sample ID: **2305230-001ADUP** | SampType: **DUP** | | | Units: **mg/L** | | Prep Date: **5/11/2023** | | RunNo: **83910** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1D** | Batch ID: **R83910** | | | | | Analysis Date: **5/11/2023** | | SeqNo: **1750375** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | 0 | | 20 | |

| Sample ID: **2305230-001AMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **5/11/2023** | | RunNo: **83910** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1D** | Batch ID: **R83910** | | | | | Analysis Date: **5/11/2023** | | SeqNo: **1750376** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.282 | 0.0500 | 0.2500 | 0 | 113 | 71.7 | 126 | | | | |

| Sample ID: **2305230-001AMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **5/11/2023** | | RunNo: **83910** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1D** | Batch ID: **R83910** | | | | | Analysis Date: **5/11/2023** | | SeqNo: **1750377** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.253 | 0.0500 | 0.2500 | 0 | 101 | 71.7 | 126 | 0.2815 | 10.6 | 20 | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2305230 |
| Logged by: | Morgan Wilson | Date Received: | 5/11/2023 9:30:00 AM |

## Chain of Custody

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes | ☑ | No | ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | | | |

## Log In

| | | | | | | |
|---|---|---|---|---|---|---|
| 3. | Coolers are present? | Yes | ☑ | No | ☐ | NA ☐ |
| 4. | Shipping container/cooler in good condition? | Yes | ☑ | No | ☐ | |
| 5. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes | ☐ | No | ☐ | Not Present ☑ |
| 6. | Was an attempt made to cool the samples? | Yes | ☑ | No | ☐ | NA ☐ |
| 7. | Were all items received at a temperature of >2°C to 6°C * | Yes | ☑ | No | ☐ | NA ☐ |
| 8. | Sample(s) in proper container(s)? | Yes | ☑ | No | ☐ | |
| 9. | Sufficient sample volume for indicated test(s)? | Yes | ☑ | No | ☐ | |
| 10. | Are samples properly preserved? | Yes | ☑ | No | ☐ | |
| 11. | Was preservative added to bottles? | Yes | ☐ | No | ☑ | NA ☐ |
| 12. | Is there headspace in the VOA vials? | Yes | ☐ | No | ☐ | NA ☑ |
| 13. | Did all samples containers arrive in good condition(unbroken)? | Yes | ☑ | No | ☐ | |
| 14. | Does paperwork match bottle labels? | Yes | ☑ | No | ☐ | |
| 15. | Are matrices correctly identified on Chain of Custody? | Yes | ☑ | No | ☐ | |
| 16. | Is it clear what analyses were requested? | Yes | ☑ | No | ☐ | |
| 17. | Were all holding times able to be met? | Yes | ☐ | No | ☑ | |

## Special Handling (if applicable)

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | Was client notified of all discrepancies with this order? | Yes | ☐ | No | ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

| Item # | Temp ºC |
|---|---|
| Sample | 5.8 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2305230

Page # _____ of _____



Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER: FREMONT

PROJECT NAME/NO.

PO # D-295

REMARKS: Please Email Results

TURNAROUND TIME
Standard TAT
RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | CT 6+ (HEX Cr) CR 11 | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1D | | 5/10/23 | 1105 | W | 1 | | | | ✓ | | | | | | | |
| MW-2D | | | 1255 | W | 1 | | | | ✓ | | | | | | | |
| MW-3D | | | 1425 | W | 1 | | | | ✓ | | | | | | | |
| MW-4D | | | 1545 | W | 1 | | | | ✓ | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | ~~Michael Erdahl~~ | Friedman & Bruya | F+B | 9:30 |
| Received by: | | Emma Tuck | Fremont Analytical | 5/11/23 | 9:30 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

May 23, 2023

Michael Erdahl
Friedman & Bruya, Inc.
5500 4th Avenue South
Seattle, WA 98108

Re: Analytical Data for Project 305192
Laboratory Reference No. 2305-121

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on May 11, 2023.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 11, 2023
Laboratory Reference: 2305-121
Project: 305192

**Case Narrative**

Samples were collected on May 10, 2023 and received by the laboratory on May 11, 2023. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 11, 2023
Laboratory Reference: 2305-121
Project: 305192

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-1D** | | | | | |
| Laboratory ID: | 05-121-01 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *90* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 11, 2023
Laboratory Reference: 2305-121
Project: 305192

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-2D** | | | | | |
| Laboratory ID: | 05-121-02 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **60** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **60** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *81* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 11, 2023
Laboratory Reference: 2305-121
Project: 305192

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-3D** | | | | | |
| Laboratory ID: | 05-121-03 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *82* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 11, 2023
Laboratory Reference: 2305-121
Project: 305192

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-4D** | | | | | |
| Laboratory ID: | 05-121-04 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *83* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 11, 2023
Laboratory Reference: 2305-121
Project: 305192

**VOLATILE PETROLEUM HYDROCARBONS**
**QUALITY CONTROL**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0519W3 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *82* | *65-122* | | | | |

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPIKE BLANKS** | | | | | | | | | | | |
| Laboratory ID: | SB0519W1 | | | | | | | | | | |
| | SB | SBD | SB | SBD | | SB | SBD | | | | |
| Benzene | **45.7** | **44.3** | 50.0 | 50.0 | | **91** | **89** | 81-118 | 3 | 12 | |
| Toluene | **46.3** | **44.9** | 50.0 | 50.0 | | **93** | **90** | 82-119 | 3 | 12 | |
| Ethylbenzene | **47.9** | **46.3** | 50.0 | 50.0 | | **96** | **93** | 81-118 | 3 | 12 | |
| m,p-Xylene | **47.3** | **45.7** | 50.0 | 50.0 | | **95** | **91** | 82-118 | 3 | 12 | |
| o-Xylene | **47.7** | **46.5** | 50.0 | 50.0 | | **95** | **93** | 81-119 | 3 | 11 | |
| *Surrogate:* | | | | | | | | | | | |
| *Fluorobenzene* | | | | | | *90* | *83* | *65-122* | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

| SUBCONTRACTER Onsite | 05-121 |
|---|---|
| PROJECT NAME/NO. 305192 | PO # D-301 |
| REMARKS EIM and EQuIS4 EDDs | |

Page # 1 of 1

TURNAROUND TIME
☒ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

| | | | | | | ANALYSES REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | EPH | VPH | BOD | Chloride | Sulfate | Sulfide | | | | | Notes |
| MW-1D | 1 | 5/10/2023 | 1105 | water | 3 | | x | | | | | | | | | |
| MW-2D | 2 | 5/10/2023 | 1255 | water | 3 | | x | | | | | | | | | |
| MW-3D | 3 | 5/10/2023 | 1425 | water | 3 | | x | | | | | | | | | |
| MW-4D | 4 | 5/10/2023 | 1545 | water | 3 | | x | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 5/11/23 | 1000AM |
| Received by: | | M. VOUN | OSE | 5/11/23 | 1613 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

June 6, 2023

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

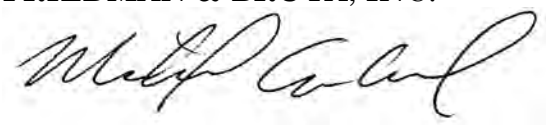
Dear Ms Goodwin:

Included are the results from the testing of material submitted on May 12, 2023 from the Kosmos 0202832-001, F&BI 305211 project. There are 42 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data, Andrew Nakahara
HNA0606R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on May 12, 2023 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos 0202832-001, F&BI 305211 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 305211 -01 | MW-1S |
| 305211 -02 | MW-2S |
| 305211 -03 | MW-2SD |
| 305211 -04 | MW-3S |
| 305211 -05 | MW-4S |

The samples were sent to Fremont Analytical for hexavalent chromium and EPH analyses. In addition, the samples were sent to Onsite Environmental for VPH analysis. The reports are enclosed.

The dissolved metals were filtered at Friedman and Bruya. The data were flagged accordingly.

The 8260D calibration standard exceeded the acceptance criteria for several compounds. The compounds were not detected, therefore this does not represent an out of control condition.

Pyrene was detected in the 8270D method blank at a level greater than one tenth the concentration detected in the samples. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211
Date Extracted: 05/12/23
Date Analyzed: 05/15/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| MW-1S<br>305211-01 | <100 | 107 |
| MW-2S<br>305211-02 | <100 | 111 |
| MW-2SD<br>305211-03 | <100 | 109 |
| MW-3S<br>305211-04 | 180 | 120 |
| MW-4S<br>305211-05 | <100 | 105 |
| Method Blank<br>03-955 MB | <100 | 108 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211
Date Extracted: 05/12/23
Date Analyzed: 05/12/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|---|
| MW-1S<br>305211-01 1/1.2 | 350 x | 1,000 x | 124 |
| MW-2S<br>305211-02 | 1,400 x | 1,700 x | 126 |
| MW-2SD<br>305211-03 1/1.2 | 1,400 x | 1,700 x | 127 |
| MW-3S<br>305211-04 1/1.4 | 1,400 x | 1,600 x | 118 |
| MW-4S<br>305211-05 | 280 x | 620 x | 130 |
| Method Blank<br>03-1162 MB | <50 | <250 | 126 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S f | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 305211-01 |
| Date Analyzed: | 05/15/23 | Data File: | 305211-01.122 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.87 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.25 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S f | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 305211-02 |
| Date Analyzed: | 05/15/23 | Data File: | 305211-02.123 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.37 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.39 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2SD f | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 305211-03 |
| Date Analyzed: | 05/15/23 | Data File: | 305211-03.124 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.37 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.41 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S f | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 305211-04 |
| Date Analyzed: | 05/15/23 | Data File: | 305211-04.125 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.93 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.39 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4S f | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 305211-05 |
| Date Analyzed: | 05/15/23 | Data File: | 305211-05.126 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 2.80 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.56 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank f | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | I3-385 mb |
| Date Analyzed: | 05/15/23 | Data File: | I3-385 mb.101 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/12/23 | Lab ID: | 305211-01 |
| Date Analyzed: | 05/12/23 | Data File: | 305211-01.112 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.91 |
| Cadmium | <1 |
| Chromium | 1.14 |
| Copper | 14.2 |
| Lead | <1 |
| Nickel | 1.27 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/12/23 | Lab ID: | 305211-02 |
| Date Analyzed: | 05/12/23 | Data File: | 305211-02.113 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 1.00 |
| Barium | 1.53 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.27 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2SD | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/12/23 | Lab ID: | 305211-03 |
| Date Analyzed: | 05/12/23 | Data File: | 305211-03.114 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 1.37 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.18 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/12/23 | Lab ID: | 305211-04 |
| Date Analyzed: | 05/12/23 | Data File: | 305211-04.115 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 2.51 |
| Barium | 34.7 |
| Cadmium | <1 |
| Lead | 4.86 |
| Selenium | <1 |
| Silver | <1 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/12/23 | Lab ID: | 305211-04 x5 |
| Date Analyzed: | 05/15/23 | Data File: | 305211-04 x5.091 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | 7.98 |
| Copper | 36.9 |
| Nickel | 7.22 |
| Zinc | 25.7 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/12/23 | Lab ID: | 305211-05 |
| Date Analyzed: | 05/12/23 | Data File: | 305211-05.116 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | 2.56 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | 1.37 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/12/23 | Lab ID: | I3-377 mb2 |
| Date Analyzed: | 05/12/23 | Data File: | I3-377 mb2.101 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <1 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <5 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <5 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211
Date Extracted: 05/12/23
Date Analyzed: 05/16/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Dissolved Mercury |
|---|---|
| MW-1S f<br>305211-01 | <0.01 |
| MW-2S f<br>305211-02 | <0.01 |
| MW-2SD f<br>305211-03 | <0.01 |
| MW-3S f<br>305211-04 | <0.01 |
| MW-4S f<br>305211-05 | <0.01 |
| Method Blank<br>I3-381 MB | <0.01 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211
Date Extracted: 05/12/23
Date Analyzed: 05/16/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| MW-1S<br>305211-01 | <0.01 |
| MW-2S<br>305211-02 | <0.01 |
| MW-2SD<br>305211-03 | <0.01 |
| MW-3S<br>305211-04 | 0.047 |
| MW-4S<br>305211-05 | <0.01 |
| Method Blank<br>I3-382 MB | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/23 | Lab ID: | 305211-01 |
| Date Analyzed: | 05/16/23 | Data File: | 051616.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 93 | 71 | 132 |
| Toluene-d8 | 94 | 68 | 139 |
| 4-Bromofluorobenzene | 102 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 k | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 k | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 k | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 k | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/23 | Lab ID: | 305211-02 |
| Date Analyzed: | 05/16/23 | Data File: | 051619.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 78 | 126 |
| Toluene-d8 | 101 | 84 | 115 |
| 4-Bromofluorobenzene | 96 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 k | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2SD | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/23 | Lab ID: | 305211-03 |
| Date Analyzed: | 05/16/23 | Data File: | 051620.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 78 | 126 |
| Toluene-d8 | 96 | 84 | 115 |
| 4-Bromofluorobenzene | 97 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 k | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/23 | Lab ID: | 305211-04 |
| Date Analyzed: | 05/16/23 | Data File: | 051621.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 78 | 126 |
| Toluene-d8 | 98 | 84 | 115 |
| 4-Bromofluorobenzene | 103 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | 1.3 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | 1.4 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | 3.9 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | 1.3 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 k | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | 1.0 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/23 | Lab ID: | 305211-05 |
| Date Analyzed: | 05/16/23 | Data File: | 051622.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 78 | 126 |
| Toluene-d8 | 99 | 84 | 115 |
| 4-Bromofluorobenzene | 98 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 k | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/16/23 | Lab ID: | 03-1097 mb |
| Date Analyzed: | 05/16/23 | Data File: | 051608.D |
| Matrix: | Water | Instrument: | GCMS13 |
| Units: | ug/L (ppb) | Operator: | MD |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 71 | 132 |
| Toluene-d8 | 102 | 68 | 139 |
| 4-Bromofluorobenzene | 102 | 62 | 136 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 k | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 k | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 k | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 k | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 305211-01 |
| Date Analyzed: | 05/15/23 | Data File: | 051519.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 76 | 11 | 173 |
| 2-Fluorobiphenyl | 79 | 25 | 128 |
| 2,4,6-Tribromophenol | 101 | 10 | 140 |
| Terphenyl-d14 | 98 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 305211-02 |
| Date Analyzed: | 05/15/23 | Data File: | 051520.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 67 | 11 | 173 |
| 2-Fluorobiphenyl | 74 | 25 | 128 |
| 2,4,6-Tribromophenol | 102 | 10 | 140 |
| Terphenyl-d14 | 96 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | 0.074 fb |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2SD | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 305211-03 |
| Date Analyzed: | 05/15/23 | Data File: | 051521.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 75 | 11 | 173 |
| 2-Fluorobiphenyl | 74 | 25 | 128 |
| 2,4,6-Tribromophenol | 100 | 10 | 140 |
| Terphenyl-d14 | 91 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | 0.073 fb |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 305211-04 |
| Date Analyzed: | 05/15/23 | Data File: | 051522.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 67 | 11 | 173 |
| 2-Fluorobiphenyl | 76 | 25 | 128 |
| 2,4,6-Tribromophenol | 106 | 10 | 140 |
| Terphenyl-d14 | 99 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | 1.9 |
| Acenaphthylene | <0.02 |
| Acenaphthene | 0.34 |
| Fluorene | 0.91 |
| Phenanthrene | 0.17 |
| Anthracene | 0.083 |
| Fluoranthene | 0.044 |
| Pyrene | 0.056 fb |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4S | Client: | Haley & Aldrich, Inc |
| Date Received: | 05/12/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 305211-05 |
| Date Analyzed: | 05/15/23 | Data File: | 051523.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 71 | 11 | 173 |
| 2-Fluorobiphenyl | 79 | 25 | 128 |
| 2,4,6-Tribromophenol | 106 | 10 | 140 |
| Terphenyl-d14 | 95 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 05/15/23 | Lab ID: | 03-1165 mb |
| Date Analyzed: | 05/15/23 | Data File: | 051518.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 77 | 11 | 173 |
| 2-Fluorobiphenyl | 83 | 25 | 128 |
| 2,4,6-Tribromophenol | 92 | 10 | 140 |
| Terphenyl-d14 | 114 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211
Date Extracted: 05/16/23
Date Analyzed: 05/17/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| MW-1S<br>305211-01 | <5 |
| MW-2S<br>305211-02 | 8.0 |
| MW-2SD<br>305211-03 | 5.2 |
| MW-3S<br>305211-04 | 270 |
| MW-4S<br>305211-05 | 11 |
| Method Blank<br>I3-393 MB | <5 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 305192-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 100 | 70-130 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 92 | 92 | 65-151 | 0 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 305147-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 95 | 93 | 75-125 | 2 |
| Barium | ug/L (ppb) | 50 | 2.61 | 100 | 97 | 75-125 | 3 |
| Cadmium | ug/L (ppb) | 5 | <1 | 101 | 99 | 75-125 | 2 |
| Chromium | ug/L (ppb) | 20 | <1 | 98 | 100 | 75-125 | 2 |
| Copper | ug/L (ppb) | 20 | <5 | 102 | 102 | 75-125 | 0 |
| Lead | ug/L (ppb) | 10 | <1 | 98 | 96 | 75-125 | 2 |
| Nickel | ug/L (ppb) | 20 | <1 | 99 | 99 | 75-125 | 0 |
| Selenium | ug/L (ppb) | 5 | <1 | 99 | 96 | 75-125 | 3 |
| Silver | ug/L (ppb) | 5 | <1 | 99 | 97 | 75-125 | 2 |
| Zinc | ug/L (ppb) | 50 | 25.0 | 98 b | 95 b | 75-125 | 3 b |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 92 | 80-120 |
| Barium | ug/L (ppb) | 50 | 97 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 98 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 98 | 80-120 |
| Copper | ug/L (ppb) | 20 | 101 | 80-120 |
| Lead | ug/L (ppb) | 10 | 96 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 99 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 97 | 80-120 |
| Silver | ug/L (ppb) | 5 | 97 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 98 | 80-120 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 305192-04 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 95 | 95 | 75-125 | 0 |
| Barium | ug/L (ppb) | 50 | <1 | 96 | 95 | 75-125 | 1 |
| Cadmium | ug/L (ppb) | 5 | <1 | 98 | 97 | 75-125 | 1 |
| Chromium | ug/L (ppb) | 20 | <1 | 101 | 98 | 75-125 | 3 |
| Copper | ug/L (ppb) | 20 | <5 | 97 | 97 | 75-125 | 0 |
| Lead | ug/L (ppb) | 10 | <1 | 100 | 99 | 75-125 | 1 |
| Nickel | ug/L (ppb) | 20 | <1 | 99 | 97 | 75-125 | 2 |
| Selenium | ug/L (ppb) | 5 | <1 | 97 | 98 | 75-125 | 1 |
| Silver | ug/L (ppb) | 5 | <1 | 95 | 93 | 75-125 | 2 |
| Zinc | ug/L (ppb) | 50 | <5 | 94 | 95 | 75-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 86 | 80-120 |
| Barium | ug/L (ppb) | 50 | 97 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 99 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 95 | 80-120 |
| Copper | ug/L (ppb) | 20 | 99 | 80-120 |
| Lead | ug/L (ppb) | 10 | 99 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 98 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 89 | 80-120 |
| Silver | ug/L (ppb) | 5 | 95 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 305211-05(Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.01 | 100 | 113 | 71-125 | 12 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 114 | 66-126 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 305211-02(Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.01 | 94 | 98 | 71-125 | 4 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 112 | 66-126 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 305211-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | <1 | 131 | 27-164 |
| Chloromethane | ug/L (ppb) | 10 | <10 | 89 | 34-141 |
| Vinyl chloride | ug/L (ppb) | 10 | <0.02 | 103 | 16-176 |
| Bromomethane | ug/L (ppb) | 10 | <5 | 115 | 10-193 |
| Chloroethane | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | <1 | 114 | 50-150 |
| Acetone | ug/L (ppb) | 50 | <50 | 59 | 15-179 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| Hexane | ug/L (ppb) | 10 | <5 | 96 | 49-161 |
| Methylene chloride | ug/L (ppb) | 10 | <5 | 99 | 40-143 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | <1 | 97 | 50-150 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 107 | 62-152 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| Chloroform | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | <20 | 81 | 34-168 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | <0.2 | 111 | 50-150 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | <1 | 107 | 50-150 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | <1 | 97 | 50-150 |
| Carbon tetrachloride | ug/L (ppb) | 10 | <0.5 | 107 | 50-150 |
| Benzene | ug/L (ppb) | 10 | <0.35 | 95 | 50-150 |
| Trichloroethene | ug/L (ppb) | 10 | <0.5 | 94 | 43-133 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Bromodichloromethane | ug/L (ppb) | 10 | <0.5 | 92 | 50-150 |
| Dibromomethane | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | <10 | 101 | 50-150 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 89 | 48-145 |
| Toluene | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 89 | 37-152 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | <0.5 | 92 | 50-150 |
| 2-Hexanone | ug/L (ppb) | 50 | <10 | 86 | 50-150 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | <1 | 91 | 50-150 |
| Tetrachloroethene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| Dibromochloromethane | ug/L (ppb) | 10 | <0.5 | 94 | 33-164 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | <1 | 94 | 50-150 |
| Chlorobenzene | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| Ethylbenzene | ug/L (ppb) | 10 | <1 | 96 | 50-150 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| m,p-Xylene | ug/L (ppb) | 20 | <2 | 98 | 50-150 |
| o-Xylene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| Styrene | ug/L (ppb) | 10 | <1 | 95 | 50-150 |
| Isopropylbenzene | ug/L (ppb) | 10 | <1 | 93 | 50-150 |
| Bromoform | ug/L (ppb) | 10 | <5 | 93 | 23-161 |
| n-Propylbenzene | ug/L (ppb) | 10 | <1 | 88 | 50-150 |
| Bromobenzene | ug/L (ppb) | 10 | <1 | 93 | 50-150 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 93 | 50-150 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | <0.2 | 86 | 57-162 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | <1 | 87 | 33-151 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | <1 | 90 | 50-150 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | <1 | 90 | 50-150 |
| tert-Butylbenzene | ug/L (ppb) | 10 | <1 | 89 | 50-150 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 91 | 50-150 |
| sec-Butylbenzene | ug/L (ppb) | 10 | <1 | 89 | 46-139 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | <1 | 92 | 46-140 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 92 | 50-150 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 92 | 50-150 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 90 | 50-150 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | <10 | 81 | 50-150 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 92 | 50-150 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | <0.5 | 96 | 42-150 |
| Naphthalene | ug/L (ppb) | 10 | <1 | 89 | 50-150 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 89 | 44-155 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | 145 | 130 | 49-149 | 11 |
| Chloromethane | ug/L (ppb) | 10 | 101 | 97 | 34-143 | 4 |
| Vinyl chloride | ug/L (ppb) | 10 | 105 | 101 | 43-149 | 4 |
| Bromomethane | ug/L (ppb) | 10 | 107 | 102 | 28-182 | 5 |
| Chloroethane | ug/L (ppb) | 10 | 102 | 99 | 59-157 | 3 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | 111 | 107 | 59-141 | 4 |
| Acetone | ug/L (ppb) | 50 | 70 | 67 | 20-139 | 4 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | 107 | 102 | 67-138 | 5 |
| Hexane | ug/L (ppb) | 10 | 110 | 106 | 50-161 | 4 |
| Methylene chloride | ug/L (ppb) | 10 | 104 | 97 | 29-192 | 7 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | 100 | 98 | 70-130 | 2 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | 105 | 101 | 70-130 | 4 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | 101 | 99 | 70-130 | 2 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | 124 | 116 | 71-148 | 7 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | 106 | 103 | 70-130 | 3 |
| Chloroform | ug/L (ppb) | 10 | 103 | 102 | 70-130 | 1 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 100 | 85 | 50-157 | 16 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | 109 | 106 | 70-130 | 3 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | 106 | 104 | 70-130 | 2 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | 104 | 99 | 70-130 | 5 |
| Carbon tetrachloride | ug/L (ppb) | 10 | 106 | 102 | 70-130 | 4 |
| Benzene | ug/L (ppb) | 10 | 101 | 98 | 70-130 | 3 |
| Trichloroethene | ug/L (ppb) | 10 | 98 | 96 | 70-130 | 2 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | 101 | 103 | 70-130 | 2 |
| Bromodichloromethane | ug/L (ppb) | 10 | 94 | 90 | 70-130 | 4 |
| Dibromomethane | ug/L (ppb) | 10 | 102 | 103 | 70-130 | 1 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 105 | 99 | 70-130 | 6 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | 97 | 94 | 70-130 | 3 |
| Toluene | ug/L (ppb) | 10 | 97 | 97 | 70-130 | 0 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | 96 | 99 | 70-130 | 3 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | 95 | 96 | 70-130 | 1 |
| 2-Hexanone | ug/L (ppb) | 50 | 92 | 93 | 66-132 | 1 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | 95 | 98 | 70-130 | 3 |
| Tetrachloroethene | ug/L (ppb) | 10 | 104 | 104 | 70-130 | 0 |
| Dibromochloromethane | ug/L (ppb) | 10 | 94 | 97 | 63-142 | 3 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | 96 | 97 | 70-130 | 1 |
| Chlorobenzene | ug/L (ppb) | 10 | 97 | 100 | 70-130 | 3 |
| Ethylbenzene | ug/L (ppb) | 10 | 99 | 100 | 70-130 | 1 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | 101 | 103 | 70-130 | 2 |
| m,p-Xylene | ug/L (ppb) | 20 | 100 | 101 | 70-130 | 1 |
| o-Xylene | ug/L (ppb) | 10 | 104 | 105 | 70-130 | 1 |
| Styrene | ug/L (ppb) | 10 | 97 | 99 | 70-130 | 2 |
| Isopropylbenzene | ug/L (ppb) | 10 | 96 | 97 | 70-130 | 1 |
| Bromoform | ug/L (ppb) | 10 | 97 | 98 | 50-157 | 1 |
| n-Propylbenzene | ug/L (ppb) | 10 | 97 | 97 | 70-130 | 0 |
| Bromobenzene | ug/L (ppb) | 10 | 100 | 96 | 70-130 | 4 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | 101 | 100 | 52-150 | 1 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | 99 | 97 | 75-140 | 2 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | 98 | 91 | 40-153 | 7 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | 99 | 98 | 70-130 | 1 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | 99 | 100 | 70-130 | 1 |
| tert-Butylbenzene | ug/L (ppb) | 10 | 99 | 97 | 70-130 | 2 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | 99 | 99 | 70-130 | 0 |
| sec-Butylbenzene | ug/L (ppb) | 10 | 95 | 97 | 70-130 | 2 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | 98 | 99 | 70-130 | 1 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | 97 | 98 | 70-130 | 1 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | 96 | 97 | 70-130 | 1 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | 93 | 95 | 70-130 | 2 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | 87 | 87 | 70-130 | 0 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | 98 | 97 | 70-130 | 1 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | 101 | 101 | 70-130 | 0 |
| Naphthalene | ug/L (ppb) | 10 | 95 | 95 | 61-133 | 0 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | 94 | 96 | 69-143 | 2 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 5 | 73 | 74 | 50-104 | 1 |
| 2-Methylnaphthalene | ug/L (ppb) | 5 | 86 | 87 | 52-113 | 1 |
| 1-Methylnaphthalene | ug/L (ppb) | 5 | 90 | 91 | 51-115 | 1 |
| Acenaphthylene | ug/L (ppb) | 5 | 88 | 89 | 60-114 | 1 |
| Acenaphthene | ug/L (ppb) | 5 | 88 | 89 | 57-110 | 1 |
| Fluorene | ug/L (ppb) | 5 | 95 | 96 | 61-115 | 1 |
| Phenanthrene | ug/L (ppb) | 5 | 92 | 93 | 63-113 | 1 |
| Anthracene | ug/L (ppb) | 5 | 95 | 95 | 65-117 | 0 |
| Fluoranthene | ug/L (ppb) | 5 | 99 | 98 | 68-121 | 1 |
| Pyrene | ug/L (ppb) | 5 | 100 | 98 | 62-133 | 2 |
| Benz(a)anthracene | ug/L (ppb) | 5 | 100 | 98 | 66-131 | 2 |
| Chrysene | ug/L (ppb) | 5 | 108 | 108 | 66-129 | 0 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 99 | 100 | 66-129 | 1 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 104 | 92 | 55-144 | 12 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 101 | 104 | 58-139 | 3 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 92 | 95 | 62-136 | 3 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 99 | 98 | 55-146 | 1 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 5 | 98 | 96 | 58-137 | 2 |

Date of Report: 06/06/23
Date Received: 05/12/23
Project: Kosmos 0202832-001, F&BI 305211

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: 305192-02 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| TSS | mg/L (ppm) | 6.4 | 6.8 | 6 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| TSS | mg/L (ppm) | 20 | 100 | 35-146 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

305211

# SAMPLE CHAIN OF CUSTODY

05/12/23

VW4 / F4 / K5

Page # 1 of 1

Report To Angie Goodwin

Company HA

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

| PROJECT NAME | PO # |
|---|---|
| Cosmos | 0202832-001 |
| REMARKS<br>Project specific RLs? - Yes / No | INVOICE TO |

TURNAROUND TIME
☒ Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH/VPH | Total RCRA Metals | TSS | CVOC | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1S | 01 A-O | 5/11/23 | 1000 | H2O | 15 | X | X | | | X | X | | X | X | X | X | As, Ba, Cd, |
| MW-2S | 02 A-N | | 1200 | | 15 | X | X | | | X | X | | X | X | X | X | Cr, Cu, Pb, |
| MW-2SD | 03 A-O | | 1300 | | 15 | X | X | | | X | X | | X | X | X | X | Hg, Ni, Se, |
| MW-3S | 04 A-Q | | 1330 | | 17 | X | X | | | X | X | | X | X | X | X | Ag, Zn |
| MW-4S | 05 A-O | | 1600 | | 15 | X | X | | | X | X | | X | X | X | X | |
| | | | | | | | | | | | | | | | | | MW-3S |
| | | | | | | | | | | | | | | | | | Low-recovery |
| | | | | | | | | | | | | | | | | | If required prior |
| | | | | | | | | | | | | | | | | | VOC/Gx, Dx, EPH |
| | | | | | | | | | | | | | | | | | VPH, PAH, metals |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Nakahara | HA | 5/12/23 | 0850 |
| Received by: | Eric Young | F+B | 5/12/23 | 0850 |
| Relinquished by: | | Samples received at 4 °C | | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

**RE: 305211**
**Work Order Number: 2305259**

May 30, 2023

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 5 sample(s) on 5/12/2023 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***
***Hexavalent Chromium by SM 3500 Cr B***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *06/07/2023*

**CLIENT:** Friedman & Bruya
**Project:** 305211
**Work Order:** 2305259

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2305259-001 | MW-1S | 05/11/2023 10:00 AM | 05/12/2023 9:20 AM |
| 2305259-002 | MW-2S | 05/11/2023 12:00 PM | 05/12/2023 9:20 AM |
| 2305259-003 | MW-2SD | 05/11/2023 1:00 PM | 05/12/2023 9:20 AM |
| 2305259-004 | MW-3S | 05/11/2023 1:30 PM | 05/12/2023 9:20 AM |
| 2305259-005 | MW-4S | 05/11/2023 4:00 PM | 05/12/2023 9:20 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Revision v1

# Case Narrative

WO#: **2305259**
Date: **5/30/2023**

**CLIENT:** Friedman & Bruya
**Project:** 305211

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Rev 1: Data for CrVI is expressed to the MDL, and report ID has been updated per client request.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

# Analytical Report

Work Order: **2305259**
Date Reported: **5/30/2023**

**Client:** Friedman & Bruya
**Project:** 305211
**Lab ID:** 2305259-001
**Client Sample ID:** **MW-1S**

**Collection Date:** 5/11/2023 10:00:00 AM
**Matrix:** Water

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 40335 | | | Analyst: SK |
| Aliphatic Hydrocarbon (C8-C10) | 132 | 78.8 | 39.0 | | µg/L | 1 | 05/25/23 16:11:20 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.4 | 20.4 | | µg/L | 1 | 05/25/23 16:11:20 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.4 | 9.71 | | µg/L | 1 | 05/25/23 16:11:20 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.4 | 14.1 | | µg/L | 1 | 05/25/23 16:11:20 |
| Aliphatic Hydrocarbon (C21-C34) | 93.7 | 39.4 | 22.3 | | µg/L | 1 | 05/25/23 16:11:20 |
| Aromatic Hydrocarbon (C8-C10) | 101 | 78.8 | 25.7 | | µg/L | 1 | 05/25/23 19:18:03 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.4 | 8.77 | | µg/L | 1 | 05/25/23 19:18:03 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.4 | 6.88 | | µg/L | 1 | 05/25/23 19:18:03 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.4 | 12.6 | | µg/L | 1 | 05/25/23 19:18:03 |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.4 | 26.2 | | µg/L | 1 | 05/25/23 19:18:03 |
| Surr: 1-Chlorooctadecane | 77.1 | 50 - 150 | | | %Rec | 1 | 05/25/23 16:11:20 |
| Surr: o-Terphenyl | 128 | 50 - 150 | | | %Rec | 1 | 05/25/23 19:18:03 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R83938 | | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 05/12/23 11:52:00 |

# Analytical Report

Work Order: **2305259**
Date Reported: **5/30/2023**

**Client:** Friedman & Bruya
**Project:** 305211
**Lab ID:** 2305259-002
**Client Sample ID:** **MW-2S**

**Collection Date:** 5/11/2023 12:00:00 PM
**Matrix:** Water

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 40335 | | | Analyst: SK |
| Aliphatic Hydrocarbon (C8-C10) | 103 | 79.0 | 39.1 | | µg/L | 1 | 05/25/23 16:34:22 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.5 | 20.4 | | µg/L | 1 | 05/25/23 16:34:22 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.5 | 9.74 | | µg/L | 1 | 05/25/23 16:34:22 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.5 | 14.1 | | µg/L | 1 | 05/25/23 16:34:22 |
| Aliphatic Hydrocarbon (C21-C34) | 87.7 | 39.5 | 22.3 | | µg/L | 1 | 05/25/23 16:34:22 |
| Aromatic Hydrocarbon (C8-C10) | 147 | 79.0 | 25.7 | | µg/L | 1 | 05/25/23 19:41:20 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.5 | 8.80 | | µg/L | 1 | 05/25/23 19:41:20 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.5 | 6.90 | | µg/L | 1 | 05/25/23 19:41:20 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.5 | 12.6 | | µg/L | 1 | 05/25/23 19:41:20 |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.5 | 26.3 | | µg/L | 1 | 05/25/23 19:41:20 |
| Surr: 1-Chlorooctadecane | 84.8 | 50 - 150 | | | %Rec | 1 | 05/25/23 16:34:22 |
| Surr: o-Terphenyl | 129 | 50 - 150 | | | %Rec | 1 | 05/25/23 19:41:20 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R83938 | | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | H | mg/L | 1 | 05/12/23 12:13:00 |

# Analytical Report

Work Order: **2305259**
Date Reported: **5/30/2023**

**Client:** Friedman & Bruya
**Collection Date:** 5/11/2023 1:00:00 PM
**Project:** 305211
**Lab ID:** 2305259-003
**Matrix:** Water
**Client Sample ID: MW-2SD**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 40335 | | | Analyst: SK |
| Aliphatic Hydrocarbon (C8-C10) | 120 | 78.3 | 38.8 | | µg/L | 1 | 05/25/23 16:57:43 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.2 | 20.2 | | µg/L | 1 | 05/25/23 16:57:43 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.2 | 9.65 | | µg/L | 1 | 05/25/23 16:57:43 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.2 | 14.0 | | µg/L | 1 | 05/25/23 16:57:43 |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.2 | 22.1 | | µg/L | 1 | 05/25/23 16:57:43 |
| Aromatic Hydrocarbon (C8-C10) | 87.7 | 78.3 | 25.5 | | µg/L | 1 | 05/25/23 20:04:36 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.2 | 8.72 | | µg/L | 1 | 05/25/23 20:04:36 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.2 | 6.84 | | µg/L | 1 | 05/25/23 20:04:36 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.2 | 12.5 | | µg/L | 1 | 05/25/23 20:04:36 |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.2 | 26.0 | | µg/L | 1 | 05/25/23 20:04:36 |
| Surr: 1-Chlorooctadecane | 94.8 | 50 - 150 | | | %Rec | 1 | 05/25/23 16:57:43 |
| Surr: o-Terphenyl | 118 | 50 - 150 | | | %Rec | 1 | 05/25/23 20:04:36 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R83938 | | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | | mg/L | 1 | 05/12/23 12:18:00 |

# Analytical Report

Work Order: **2305259**
Date Reported: **5/30/2023**

**Client:** Friedman & Bruya
**Collection Date:** 5/11/2023 1:30:00 PM
**Project:** 305211
**Lab ID:** 2305259-004
**Matrix:** Water
**Client Sample ID: MW-3S**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 40335 | | | Analyst: SK |
| Aliphatic Hydrocarbon (C8-C10) | 129 | 79.1 | 39.2 | | µg/L | 1 | 05/25/23 15:25:11 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.6 | 20.4 | | µg/L | 1 | 05/25/23 15:25:11 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.6 | 9.75 | | µg/L | 1 | 05/25/23 15:25:11 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.6 | 14.1 | | µg/L | 1 | 05/25/23 15:25:11 |
| Aliphatic Hydrocarbon (C21-C34) | 90.9 | 39.6 | 22.3 | | µg/L | 1 | 05/25/23 15:25:11 |
| Aromatic Hydrocarbon (C8-C10) | 138 | 79.1 | 25.8 | | µg/L | 1 | 05/25/23 20:28:02 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.6 | 8.81 | | µg/L | 1 | 05/25/23 20:28:02 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.6 | 6.91 | | µg/L | 1 | 05/25/23 20:28:02 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.6 | 12.6 | | µg/L | 1 | 05/25/23 20:28:02 |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.6 | 26.3 | | µg/L | 1 | 05/25/23 20:28:02 |
| Surr: 1-Chlorooctadecane | 75.7 | 50 - 150 | | | %Rec | 1 | 05/25/23 15:25:11 |
| Surr: o-Terphenyl | 84.6 | 50 - 150 | | | %Rec | 1 | 05/25/23 20:28:02 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R83938 | | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | | mg/L | 1 | 05/12/23 12:23:00 |

# Analytical Report

Work Order: **2305259**
Date Reported: **5/30/2023**

**Client:** Friedman & Bruya
**Collection Date:** 5/11/2023 4:00:00 PM
**Project:** 305211
**Lab ID:** 2305259-005
**Matrix:** Water
**Client Sample ID: MW-4S**

| Analyses | Result | RL | MDL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 40335 | | | Analyst: SK |
| Aliphatic Hydrocarbon (C8-C10) | 117 | 79.5 | 39.3 | | µg/L | 1 | 05/25/23 15:48:19 |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.7 | 20.5 | | µg/L | 1 | 05/25/23 15:48:19 |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.7 | 9.79 | | µg/L | 1 | 05/25/23 15:48:19 |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.7 | 14.2 | | µg/L | 1 | 05/25/23 15:48:19 |
| Aliphatic Hydrocarbon (C21-C34) | 93.2 | 39.7 | 22.4 | | µg/L | 1 | 05/25/23 15:48:19 |
| Aromatic Hydrocarbon (C8-C10) | 132 | 79.5 | 25.9 | | µg/L | 1 | 05/26/23 14:52:18 |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.7 | 8.85 | | µg/L | 1 | 05/26/23 14:52:18 |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.7 | 6.94 | | µg/L | 1 | 05/26/23 14:52:18 |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.7 | 12.7 | | µg/L | 1 | 05/26/23 14:52:18 |
| Aromatic Hydrocarbon (C21-C34) | 222 | 39.7 | 26.4 | | µg/L | 1 | 05/26/23 14:52:18 |
| Surr: 1-Chlorooctadecane | 89.8 | 50 - 150 | | | %Rec | 1 | 05/25/23 15:48:19 |
| Surr: o-Terphenyl | 115 | 50 - 150 | | | %Rec | 1 | 05/26/23 14:52:18 |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R83938 | | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | 0.0127 | | mg/L | 1 | 05/12/23 12:28:00 |

**Work Order:** 2305259
**CLIENT:** Friedman & Bruya
**Project:** 305211

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **MB-R83938** | SampType: **MBLK** | | | Units: **mg/L** | | Prep Date: **5/12/2023** | | RunNo: **83938** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R83938** | | | | | Analysis Date: **5/12/2023** | | SeqNo: **1751098** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | | | | |

| Sample ID: **LCS-R83938** | SampType: **LCS** | | | Units: **mg/L** | | Prep Date: **5/12/2023** | | RunNo: **83938** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R83938** | | | | | Analysis Date: **5/12/2023** | | SeqNo: **1751099** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.245 | 0.0500 | 0.2500 | 0 | 98.1 | 84.9 | 112 | | | | |

| Sample ID: **2305259-001BDUP** | SampType: **DUP** | | | Units: **mg/L** | | Prep Date: **5/12/2023** | | RunNo: **83938** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1S** | Batch ID: **R83938** | | | | | Analysis Date: **5/12/2023** | | SeqNo: **1751101** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | 0 | | 20 | H |

| Sample ID: **2305259-001BMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **5/12/2023** | | RunNo: **83938** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1S** | Batch ID: **R83938** | | | | | Analysis Date: **5/12/2023** | | SeqNo: **1751102** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.248 | 0.0500 | 0.2500 | 0 | 99.2 | 71.7 | 126 | | | | H |

| Sample ID: **2305259-001BMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **5/12/2023** | | RunNo: **83938** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1S** | Batch ID: **R83938** | | | | | Analysis Date: **5/12/2023** | | SeqNo: **1751103** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.239 | 0.0500 | 0.2500 | 0 | 95.7 | 71.7 | 126 | 0.2479 | 3.57 | 20 | H |

**Work Order:** 2305259
**CLIENT:** Friedman & Bruya
**Project:** 305211

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **MB-40335** | SampType: **MBLK** | Units: **µg/L** | Prep Date: **5/12/2023** | RunNo: **84289** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **40335** | | Analysis Date: **5/16/2023** | SeqNo: **1758707** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 79.3 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.6 | | 0 | 0 | | | | | | |
| Surr: o-Terphenyl | 314 | | 396.5 | | 79.2 | 50 | 150 | | | | |

| Sample ID: **LCS-40335** | SampType: **LCS** | Units: **µg/L** | Prep Date: **5/12/2023** | RunNo: **84289** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **40335** | | Analysis Date: **5/16/2023** | SeqNo: **1758708** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 405 | 79.2 | 989.7 | 0 | 40.9 | 23.9 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 294 | 39.6 | 494.8 | 0 | 59.5 | 41.8 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 351 | 39.6 | 494.8 | 0 | 70.9 | 36.7 | 113 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 356 | 39.6 | 494.8 | 0 | 72.0 | 52.2 | 124 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 513 | 39.6 | 494.8 | 0 | 104 | 50.5 | 139 | | | | |
| Surr: o-Terphenyl | 343 | | 395.9 | | 86.7 | 50 | 150 | | | | |

| Sample ID: **2305262-003ADUP** | SampType: **DUP** | Units: **µg/L** | Prep Date: **5/12/2023** | RunNo: **84289** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **40335** | | Analysis Date: **5/16/2023** | SeqNo: **1758711** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 98.9 | | 0 | 0 | | | 102.0 | 3.41 | 25 | |
| Aromatic Hydrocarbon (C10-C12) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C12-C16) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C16-C21) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C21-C34) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Surr: o-Terphenyl | 423 | | 494.4 | | 85.6 | 50 | 150 | | 0 | | |

**Work Order:** 2305259
**CLIENT:** Friedman & Bruya
**Project:** 305211

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-40335** SampType: **MBLK** Units: **µg/L** Prep Date: **5/12/2023** RunNo: **84289**
Client ID: **MBLKW** Batch ID: **40335** Analysis Date: **5/19/2023** SeqNo: **1758648**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.3 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.6 | | 0 | 0 | | | | | | |
| Surr: 1-Chlorooctadecane | 266 | | 396.5 | | 67.1 | 50 | 150 | | | | |

Sample ID: **LCS-40335** SampType: **LCS** Units: **µg/L** Prep Date: **5/12/2023** RunNo: **84289**
Client ID: **LCSW** Batch ID: **40335** Analysis Date: **5/19/2023** SeqNo: **1758649**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 458 | 79.2 | 989.7 | 0 | 46.2 | 15.3 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 254 | 39.6 | 494.8 | 0 | 51.3 | 32.2 | 130 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 319 | 39.6 | 494.8 | 0 | 64.5 | 41 | 106 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 307 | 39.6 | 494.8 | 0 | 62.1 | 47.9 | 103 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 261 | 39.6 | 494.8 | 0 | 52.6 | 33.4 | 142 | | | | |
| Surr: 1-Chlorooctadecane | 269 | | 395.9 | | 68.0 | 50 | 150 | | | | |

Sample ID: **2305262-003ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **5/12/2023** RunNo: **84289**
Client ID: **BATCH** Batch ID: **40335** Analysis Date: **5/19/2023** SeqNo: **1758651**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 98.9 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 49.4 | | 0 | 0 | | | 0 | | 25 | |
| Surr: 1-Chlorooctadecane | 303 | | 494.4 | | 61.3 | 50 | 150 | | 0 | | |

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2305259 |
| Logged by: | Morgan Wilson | Date Received: | 5/12/2023 9:20:00 AM |

## Chain of Custody

| | | | | |
|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | |

## Log In

| | | | | |
|---|---|---|---|---|
| 3. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes ☐ | No ☐ | Not Present ☑ |
| 4. | Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 5. | Were all items received at a temperature of >2°C to 6°C * | Yes ☑ | No ☐ | NA ☐ |
| 6. | Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 7. | Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 8. | Are samples properly preserved? | Yes ☑ | No ☐ | |
| 9. | Was preservative added to bottles? | Yes ☑ | No ☐ | NA ☐ HCL |
| 10. | Is there headspace in the VOA vials? | Yes ☐ | No ☐ | NA ☑ |
| 11. | Did all samples containers arrive in good condition(unbroken)? | Yes ☑ | No ☐ | |
| 12. | Does paperwork match bottle labels? | Yes ☑ | No ☐ | |
| 13. | Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 14. | Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 15. | Were all holding times able to be met? | Yes ☐ | No ☑ | |

## Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

| | | | |
|---|---|---|---|
| Person Notified: | | Date: | |
| By Whom: | | Via: | ☐ eMail ☐ Phone ☐ Fax ☐ In Person |
| Regarding: | | | |
| Client Instructions: | | | |

17. Additional remarks:

Item Information

| Item # | Temp °C |
|---|---|
| Sample | 2.2 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2305259

Page # 1 of 1



Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER: Fremont
PROJECT NAME/NO.:
PO #: D-295

REMARKS: Please Email Results

TURNAROUND TIME
X Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
X Dispose after 30 days
Return samples
Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | Dioxins/Furans | EPH | VPH | Hexavalent | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1S | | 5/4/23 | 1000 | | 2 | | X | | X | | | | | | |
| MW-2S | | | 1200 | | 2 | | X | | X | | | | | | |
| MW-2SD | | | 1300 | | 2 | | X | | X | | | | | | |
| MW-3S | | | 1330 | | 2 | | X | | X | | | | | | |
| MW-4S | | | 1600 | | 2 | | X | | X | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | ~~Michael Erdahl~~ Eric Young | Friedman & Bruya | 5/12/23 | 9:15 |
| Received by: | | NR | FAI | 5/12/23 | 9:20 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

May 23, 2023

Michael Erdahl
Friedman & Bruya, Inc.
5500 4th Avenue South
Seattle, WA 98108

Re: Analytical Data for Project 305211
Laboratory Reference No. 2305-148

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on May 12, 2023.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 12, 2023
Laboratory Reference: 2305-148
Project: 305211

**Case Narrative**

Samples were collected on May 11, 2023 and received by the laboratory on May 12, 2023. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 12, 2023
Laboratory Reference: 2305-148
Project: 305211

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-1S** | | | | | |
| Laboratory ID: | 05-148-01 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *83* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 12, 2023
Laboratory Reference: 2305-148
Project: 305211

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-2S** | | | | | |
| Laboratory ID: | 05-148-02 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *81* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 12, 2023
Laboratory Reference: 2305-148
Project: 305211

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-2SD** | | | | | |
| Laboratory ID: | 05-148-03 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *82* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 12, 2023
Laboratory Reference: 2305-148
Project: 305211

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-3S** | | | | | |
| Laboratory ID: | 05-148-04 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **73** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **310** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **390** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *84* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 12, 2023
Laboratory Reference: 2305-148
Project: 305211

## VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **MW-4S** | | | | | |
| Laboratory ID: | 05-148-05 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *81* | *65-122* | | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 23, 2023
Samples Submitted: May 12, 2023
Laboratory Reference: 2305-148
Project: 305211

**VOLATILE PETROLEUM HYDROCARBONS**
**QUALITY CONTROL**

Matrix: Water
Units: ug/L (ppb)

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0519W3 | | | | | |
| Aliphatic C5-C6 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C6-C8 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aliphatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aliphatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C8-C10 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C10-C12 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Aromatic C12-C13 | **ND** | 50 | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Total Aromatic: | **NA** | | NWTPH-VPH | 5-19-23 | 5-19-23 | |
| Methyl t-butyl ether | **ND** | 10 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Benzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Toluene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| Ethylbenzene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| m,p-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| o-Xylene | **ND** | 1.0 | EPA 8021B | 5-19-23 | 5-19-23 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Fluorobenzene* | *82* | *65-122* | | | | |

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SPIKE BLANKS** | | | | | | | | | | | |
| Laboratory ID: | SB0519W1 | | | | | | | | | | |
| | SB | SBD | SB | SBD | | SB | SBD | | | | |
| Benzene | **45.7** | **44.3** | 50.0 | 50.0 | | **91** | **89** | 81-118 | 3 | 12 | |
| Toluene | **46.3** | **44.9** | 50.0 | 50.0 | | **93** | **90** | 82-119 | 3 | 12 | |
| Ethylbenzene | **47.9** | **46.3** | 50.0 | 50.0 | | **96** | **93** | 81-118 | 3 | 12 | |
| m,p-Xylene | **47.3** | **45.7** | 50.0 | 50.0 | | **95** | **91** | 82-118 | 3 | 12 | |
| o-Xylene | **47.7** | **46.5** | 50.0 | 50.0 | | **95** | **93** | 81-119 | 3 | 11 | |
| *Surrogate:* | | | | | | | | | | | |
| *Fluorobenzene* | | | | | | *90* | *83* | *65-122* | | | |



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference



This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

| SUBCONTRACTER Onsite | 05-148 |
|---|---|
| PROJECT NAME/NO. 305211 | PO # D-301 |
| REMARKS EIM and EQuIS 4 EDDs | |



TURNAROUND TIME
☒ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

| | | | | | | ANALYSES REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | VPH | COD | BOD | Chloride | Sulfate | Sulfide | | | | | Notes |
| MW-1S | 1 | 5/11/2023 | 1000 | water | 3 | x | | | | | | | | | | |
| MW-2S | 2 | 5/11/2023 | 1200 | water | 3 | x | | | | | | | | | | |
| MW-2SD | 3 | 5/11/2023 | 1300 | water | 3 | x | | | | | | | | | | |
| MW-3S | 4 | 5/11/2023 | 1330 | water | 3 | x | | | | | | | | | | |
| MW-4S | 5 | 5/11/2023 | 1600 | water | 3 | x | | | | | | | | | | |
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*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | Michael Erdahl | Friedman & Bruya | 5-12 | 1340 |
| Received by: | | M. VOLN | OSE | 5/12/23 | 1340 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Haley & Aldrich, Inc.
600 South Meyer Ave.
Suite 100
Tucson, AZ 85701
520.289.8621

# Data Usability Summary Report

**Project Name: Kosmos Mill**

**Project Description: Groundwater Samples**

**Sample Dates: 15 August 2023**

**Analytical Laboratory: Friedman & Bruya – Seattle, WA**

**Fremont Analytical – Seattle, WA**

**Validation Performed by: Kirkland Broadwell**

**Validation Reviewed by: Katherine Miller**

**Validation Date: 8 September 2023**

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Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the analytical results for Sample Delivery Group (SDG) listed. This DUSR is organized into the following sections:

1. **Sample Delivery Group Number 308252**
2. **Explanations**
3. **Glossary**
4. **Abbreviations**
5. **Qualifiers**

**References**

This data validation and usability assessment was performed per the guidance and requirements established by the United States Environmental Protection Agency (USEPA) using the following reference materials:

- National Functional Guidelines (NFG) for Inorganic Data Review.
- National Functional Guidelines (NFG) for Organic Data Review.
- The project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section).

Data reported in this sampling event were reported to the laboratory reporting limit (RL).

Sample data were qualified in accordance with the laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives (DQOs) for the project and are therefore usable; any exceptions are noted in the following pages.

# 1. Sample Delivery Group Number 308252

## 1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number:

- 308252, dated 31 August 2023.

Samples were collected, preserved, and shipped following standard chain of custody (COC) protocols.

- Samples for extractable petroleum hydrocarbons (EPH), volatile petroleum hydrocarbons (VPH), and hexavalent chromium analysis were subcontracted to Freemont Analytical – Seattle, WA (Laboratory IDs 2308213-001 through 2308213-005)

Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- Custody seals were not used when samples were transported between subcontracted laboratories.

Analyses were performed on the following samples:

| Sample ID | Sample Type | Lab ID | Sample Date | Matrix | Methods |
|---|---|---|---|---|---|
| MW-1D-20230815 | N | 30852-01 | 08/15/2023 | WG | A, B, C, D, E, F, G |
| MW-2D-20230815 | N | 30852-02 | 08/15/2023 | WG | A, B, C, D, E, F, G |
| MW-3D-20230815 | N | 30852-03 | 08/15/2023 | WG | A, B, C, D, E, F, G |
| MW-4-20230815 | N | 30852-04 | 08/15/2023 | WG | A, B, C, D, E, F, G |
| MW-3DD-20230815 | FD | 30852-05 | 08/15/2023 | WG | A, B, C, D, E, F, G |
| MW-1D-20230815 | N | 2308213-001 | 08/15/2023 | WG | H, I, J |
| MW-2D-20230815 | N | 2308213-002 | 08/15/2023 | WG | H, I, J |
| MW-3D-20230815 | N | 2308213-003 | 08/15/2023 | WG | H, I, J |
| MW-4D-20230815 | N | 2308213-004 | 08/15/2023 | WG | H, I, J |
| MW-3DD-20230815 | FD | 2308213-005 | 08/15/2023 | WG | H, I, J |

| Method Holding Times | | | |
|---|---|---|---|
| A. | E1631E | Mercury | 28 days preserved; 48 hours unpreserved |
| B. | NWTPH-DX | TPH – Total Diesel | 14 days for liquid; preserved 7 days for liquid unpreserved |
| C. | NWTPH-GX | TPH – Total Diesel | 14 days for liquid; preserved 7 days for liquid unpreserved |
| D. | SM2540D | Total Suspended Solids (TSS) | 7 days |
| E. | SW6020B | Metals | 180 days for liquid |
| F. | SW8260D | Volatile Organic Compounds (VOCs) | 14 days for liquid; preserved 7 days for liquid unpreserved |
| G. | SW8270E | Polycyclic Aromatic Hydrocarbons (PAHs) | 7 days extraction; 40 days analysis for liquid |
| H. | NWEPH | EPH Fractions | 14 days preserved; 7 days unpreserved |

| Method Holding Times | | | |
|---|---|---|---|
| I. | NWTPH-VPH | VPH Fractions | 14 days preserved; 7 days unpreserved |
| J. | SM3500-CR B | Hexavalent Chromium | 24 hours |

## 1.2 CASE NARRATIVE

The laboratory report case narratives included the following issues:

- SDG 308252: The 8260D acetone calibration standard exceeded the acceptance criteria. The compound was not detected; therefore, no data qualification was necessary.

## 1.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

## 1.4 REPORTING LIMITS AND SAMPLE DILUTIONS

The RLs for the samples within this SDG met or were below the minimum RL requirements specified by the project-specific QAPP, with the following exceptions:

| Sample ID | Lab ID | Analyte/ Method | Dilution Factor |
|---|---|---|---|
| All samples | All samples | hexavalent chromium | 1x |
| All samples | All samples | 2-butanone | 1x |
| All samples | All samples | acetone | 1x |
| All samples | All samples | bromomethane | 1x |
| All samples | All samples | bromoform | 1x |
| All samples | All samples | hexane | 1x |
| All samples | All samples | trans-1,3-dichloropropene | 1x |

## 1.5 SURROGATE RECOVERY COMPLIANCE

Refer to Section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory-specified quality control (QC) limits, with the following exceptions:

| Method | Sample ID | Batch ID | Surrogate | Dilution | %R | Qualification |
|---|---|---|---|---|---|---|
| NWEPH | MW-1D-20230815 | 41169 | 1-chlorooctadecane | 1x | 28.7% | J-/UJ target compounds* |
| NWEPH | MW-3D-20230815 | 41169 | 1-chlorooctadecane | 1x | 41.3% | J-/UJ target compounds* |
| NWEPH | MW-4D-20230815 | 41169 | 1-chlorooctadecane | 1x | 19.9% | J-/UJ target compounds* |
| NWEPH | MW-3DD-20230815 | 41169 | 1-chlorooctadecane | 1x | 19.0% | J-/UJ target compounds* |

** Compounds targeted by 1-chlorooctadecane: all aliphatic compounds*

## 1.6 LABORATORY CONTROL SAMPLES

Refer to Section E 1.3. Compounds associated with the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses associated with client samples exhibited recoveries and relative percent differences (RPDs) within the specified limits.

## 1.7 MATRIX SPIKE SAMPLES

Refer to Section E 1.4. The samples below were used for matrix spike/matrix spike duplicate (MS/MSD):

| Lab Sample Number | Matrix Spike/Matrix Spike Duplicate Sample Client ID | Method |
|---|---|---|
| 30852-01 | MW-1D-20230815 | SW6020B |
| 30852-02 | MW-2D-20230815 | 1631E |
| 2308213-001 | MW-1D-20230815 | SM3500-CR B |

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits.

## 1.8 BLANK SAMPLE ANALYSIS

Refer to Section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

## 1.9 DUPLICATE SAMPLE ANALYSIS

Refer to Section E 1.6. The following sample was used for laboratory duplicate analysis, and the RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL):

| Lab Sample Number | Laboratory Duplicate Sample Client ID | Method |
|---|---|---|
| 2308213-004 | MW-4D-20230815 | SM3500-CR B |

The following samples were used for field duplicate analysis. RPDs were all below 35 percent. Any exceptions are noted below and qualified.

| Primary Sample ID | Duplicate Sample ID | Methods |
|---|---|---|
| MW-3D-20230815 | MW-3DD-20230815 | A, B, C, D, E, F, G, H, I, J |

**Field Duplicate RPD Calculations:**

| Method: SM2540D | | | | |
|---|---|---|---|---|
| Analyte (µg/L) | Primary Sample ID MW-3D-20230815 | Duplicate Sample ID MW-3DD-20230815 | % RPD | Qualification |
| TSS | 33 | 91 | 94% | J/UJ, RPD>35 |

## 1.10 PRECISION AND ACCURACY

Refer to Section E 1.7. Where required by the method, some measurement of analytical accuracy and precision was reported for each method with the site samples.

## 1.11 CALCULATION ACCURACY

Total (non-filtered) metals were greater than dissolved (filtered) metals, and total chromium was greater than hexavalent chromium, with the following exceptions:

| Sample ID | Analyte | Total (µg/L) | Dissolved (µg/L) | %RPD | Action |
|---|---|---|---|---|---|
| MW-1D-20230815 | Zinc | 14.9 | 18.8 | 23% | None, RPD < 100% |

*µg/L = micrograms per liter*

## 1.12 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the DQOs for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable, as no data was rejected. The qualifiers applied to this data set are summarized in the table below.

| Sample ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|
| MW-3D-20230815 | TSS | 33 | 33 J | Field duplicate calculations |
| MW-3DD-20230815 | TSS | 91 | 91 J | Field duplicate calculations |
| MW-1D-20230815 | EPH (C10-C12) Aliphatic | U | UJ | Surrogate recovery low |
| MW-1D-20230815 | EPH (C12-C16) Aliphatic | U | UJ | Surrogate recovery low |
| MW-1D-20230815 | EPH (C16-C21) Aliphatic | U | UJ | Surrogate recovery low |
| MW-1D-20230815 | EPH (C21-C34) Aliphatic | U | UJ | Surrogate recovery low |
| MW-1D-20230815 | EPH (C8-C10) Aliphatic | U | UJ | Surrogate recovery low |
| MW-3D-20230815 | EPH (C10-C12) Aliphatic | U | UJ | Surrogate recovery low |
| MW-3D-20230815 | EPH (C12-C16) Aliphatic | U | UJ | Surrogate recovery low |
| MW-3D-20230815 | EPH (C16-C21) Aliphatic | U | UJ | Surrogate recovery low |
| MW-3D-20230815 | EPH (C21-C34) Aliphatic | U | UJ | Surrogate recovery low |

| Sample ID | Analyte | Reported Result | Validated Result | Reason for Qualifier |
|---|---|---|---|---|
| MW-3D-20230815 | EPH (C8-C10) Aliphatic | U | UJ | Surrogate recovery low |
| MW-3DD-20230815 | EPH (C10-C12) Aliphatic | U | UJ | Surrogate recovery low |
| MW-3DD-20230815 | EPH (C12-C16) Aliphatic | U | UJ | Surrogate recovery low |
| MW-3DD-20230815 | EPH (C16-C21) Aliphatic | U | UJ | Surrogate recovery low |
| MW-3DD-20230815 | EPH (C21-C34) Aliphatic | U | UJ | Surrogate recovery low |
| MW-3DD-20230815 | EPH (C8-C10) Aliphatic | U | UJ | Surrogate recovery low |
| MW-4D-20230815 | EPH (C10-C12) Aliphatic | U | UJ | Surrogate recovery low |
| MW-4D-20230815 | EPH (C12-C16) Aliphatic | U | UJ | Surrogate recovery low |
| MW-4D-20230815 | EPH (C16-C21) Aliphatic | U | UJ | Surrogate recovery low |
| MW-4D-20230815 | EPH (C21-C34) Aliphatic | U | UJ | Surrogate recovery low |
| MW-4D-20230815 | EPH (C8-C10) Aliphatic | U | UJ | Surrogate recovery low |

## 2. Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.2 Surrogate Recovery Compliance
  - Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to sample preparation to determining the efficiency of the extraction procedure by evaluating the %R of the compounds.
- E 1.3 Laboratory Control Samples
  - The LCS/LCSD analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - MS/MSD data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post-digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
  - The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the RPD found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.
  - Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the %R of certain spiked compounds. This can be assessed using LCS, blank spike (BS), MS, and/or surrogate recoveries.

# 3. Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg micrograms per kilogram
  - µg/L micrograms per liter
  - µg/$m^3$ micrograms per cubic meter
  - mg/kg milligrams per kilogram
  - mg/L milligrams per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - SSV Sub-slab Vapor
  - WQ Water Quality control matrix
  - WS Surface Water
- Table Footnotes:
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Common Symbols:
  - % percent
  - < less than
  - ≤ less than or equal to
  - > greater than
  - ≥ greater than or equal to
  - = equal
  - °C degrees Celsius
  - ± plus or minus
  - ~ approximately
  - x times (multiplier)

- Fractions:
  - N Normal (method cannot be filtered)
  - D Dissolved (filtered)
  - T Total (unfiltered)

# 4. Abbreviations

| | |
|---|---|
| %D | Percent Difference |
| %R | Percent Recovery |
| %RSD | Percent Relative Standard Deviation |
| %v/v | Percent volume by volume |
| 2s | 2 sigma |
| 4,4-DDT | 4 4-dichlorodiphenyltrichloroethane |
| Abs Diff | Absolute Difference |
| amu | atomic mass unit |
| BPJ | Best Professional Judgement |
| BS | Blank Spike |
| CCB | Continuing Calibration Blank |
| CCV | Continuing Calibration Verification |
| CCVL | Continuing Calibration Verification Low |
| COC | Chain of Custody |
| COM | Combined Isotope Calculation |
| Cr (VI) | Hexavalent Chromium |
| CRI | Collision Reaction Interface |
| DoD | Department of Defense |
| DQO | data quality objective |
| DUSR | Data Usability Summary Report |
| EIS | Extraction Internal Standard |
| EMPC | Estimated Maximum Possible Concentration |
| FBK | Field Blank Contamination |
| FDP | Field Duplicate |
| GC | Gas Chromatograph |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| GPC | Gel Permeation Chromatography |
| $H_2$ | Hydrogen gas |
| HCl | Hydrochloric Acid |
| ICAL | Initial Calibration |
| ICB | Initial Calibration Blank |
| ICP/MS | Inductively Coupled Plasma/Mass Spectrometry |
| ICV | Initial Calibration Verification |
| ICVL | Initial Calibration Verification Low |
| IPA | Isopropyl Alcohol |
| LC | Laboratory Control |
| LCS/LCSD | Laboratory Control Sample/Laboratory Control Sample Duplicate |
| MBK | Method Blank Contamination |
| MDC | Minimum Detectable Concentration |
| MDL | Laboratory Method Detection Limit |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | not applicable |
| ND | Non-Detect |
| NFG | National Functional Guidelines |
| $NH_3$ | Ammonia |
| NYSDEC | New York State Department of Environmental Conservation |
| PAH | Polycyclic Aromatic Hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PDS | Post-Digestion Spike |
| PEM | Performance Evaluation Mixture |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFBA | Perfluorbutanoic Acid |
| PFD | Perfluorodecalin |
| PFOA | Perfluorooctanoic Acid |
| PFOS | Perfluorooctane sulfonate |
| PFPeA | Perfluoropentanoic Acid |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QSM | Quality Systems Manual |
| $R^2$ | R-squared value |
| Ra-226 | Radium-226 |
| Ra-228 | Radium-228 |
| RESC | Resolution Check Measure |
| RL | Laboratory Reporting Limit |
| RPD | Relative Percent Difference |
| RRF | Relative Response Factor |
| RT | Retention Time |
| SAP | Sampling Analysis Plan |
| SDG | Sample Delivery Group |
| SIM | Selected ion monitoring |
| SOP | Standard Operating Procedure |
| SPE | Solid-Phase Extraction |
| SVOC | Semi-Volatile Organic Compound |
| TCLP | Toxicity Characteristic Leaching Procedure |
| TIC | Tentatively Identified Compound |
| TKN | Total Kjeldahl Nitrogen |
| TPH | Total Petroleum Hydrocarbon |
| TPU | Total Propagated Uncertainty |
| USEPA | U.S. Environmental Protection Agency |
| VOC | Volatile Organic Compound |
| WP | Work Plan |

# 5. Qualifiers

The qualifiers below are from the USEPA NFG and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:

  U The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".

  B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers:

  E The compound was quantitated above the calibration range.

  D The concentration is based on a diluted sample analysis.

- Validation Qualifiers:

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  J/UJ as listed in exception tables J applies to detected data and UJ applies to non-detected data as reported by the laboratory.

  UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

  NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.

  R The sample results were rejected as unusable; the compound may or may not be present in the sample.

  S Result is suspect. See DUSR for details.

## References


1. Haley & Aldrich, Inc, 2021. Quality Assurance Project Plan. Remedial Investigation Work Plan. Kosmos Mill Oil Cleanup. Site Code: 19499-02. Seattle Washington. December.

2. United States Environmental Protection Agency (USEPA), 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January.

3. USEPA, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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August 31, 2023

Angie Goodwin, Project Manager
Haley & Aldrich, Inc
3131 Elliott Ave, Suite 600
Seattle, WA 98121

Dear Ms Goodwin:

Included are the results from the testing of material submitted on August 15, 2023 from the Kosmos 0202832-001, F&BI 308252 project. There are 41 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Haley Aldrich Data
HNA0831R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 15, 2023 by Friedman & Bruya, Inc. from the Haley & Aldrich, Inc Kosmos 0202832-001, F&BI 308252 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Haley & Aldrich, Inc |
|---|---|
| 308252 -01 | MW-1D |
| 308252 -02 | MW-2D |
| 308252 -03 | MW-3D |
| 308252 -04 | MW-4D |
| 308252 -05 | MW-3DD |
| 308252 -06 | Trip Blank |

Samples MW-1D, MW-2D, MW-3D, MW-4D, and MW-3DD were sent to Fremont Analytical for EPH, VPH, and hexavalent chromium analyses. The report is enclosed.

The 8260D acetone calibration standard exceeded the acceptance criteria. The compound was not detected, therefore this did not represent an out of control condition.

Silver in the 6020B matrix spike and matrix spike duplicate exceeded the acceptance criteria. Silver was not detected, therefore the results were acceptable.

All other quality control requirements were acceptable.

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252
Date Extracted: 08/17/23
Date Analyzed: 08/17/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| MW-1D<br>308252-01 | <100 | 100 |
| MW-2D<br>308252-02 | <100 | 100 |
| MW-3D<br>308252-03 | <100 | 101 |
| MW-4D<br>308252-04 | <100 | 100 |
| MW-3DD<br>308252-05 | <100 | 97 |
| Method Blank<br>03-1643 MB | <100 | 100 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252
Date Extracted: 08/16/23
Date Analyzed: 08/16/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|---|
| MW-1D<br>308252-01 | 92 x | <250 | 103 |
| MW-2D<br>308252-02 | 56 x | <250 | 98 |
| MW-3D<br>308252-03 | 83 x | <250 | 112 |
| MW-4D<br>308252-04 | 81 x | <250 | 114 |
| MW-3DD<br>308252-05 | 57 x | <250 | 98 |
| Method Blank<br>03-1936 MB | <50 | <250 | 134 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/18/23 | Lab ID: | 308252-01 |
| Date Analyzed: | 08/22/23 | Data File: | 308252-01.037 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 0.448 |
| Barium | 3.21 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 18.8 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/18/23 | Lab ID: | 308252-02 |
| Date Analyzed: | 08/22/23 | Data File: | 308252-02.038 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 0.453 |
| Barium | 2.44 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/18/23 | Lab ID: | 308252-03 |
| Date Analyzed: | 08/22/23 | Data File: | 308252-03.039 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 0.513 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 1.51 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 4.41 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/18/23 | Lab ID: | 308252-04 |
| Date Analyzed: | 08/22/23 | Data File: | 308252-04.040 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 0.478 |
| Barium | 1.15 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 1.12 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 10.7 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/18/23 | Lab ID: | 308252-05 |
| Date Analyzed: | 08/22/23 | Data File: | 308252-05.041 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 0.490 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 1.57 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 5.90 |

## Analysis For Dissolved Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/18/23 | Lab ID: | I3-648 mb |
| Date Analyzed: | 08/18/23 | Data File: | I3-648 mb.222 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <0.2 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/16/23 | Lab ID: | 308252-01 |
| Date Analyzed: | 08/17/23 | Data File: | 308252-01.141 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 0.763 |
| Barium | 6.39 |
| Cadmium | <1 |
| Chromium | 1.86 |
| Copper | 3.36 |
| Lead | 2.51 |
| Nickel | 1.34 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 14.9 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/16/23 | Lab ID: | 308252-02 |
| Date Analyzed: | 08/17/23 | Data File: | 308252-02.142 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 0.495 |
| Barium | 5.22 |
| Cadmium | <1 |
| Chromium | 2.35 |
| Copper | <2 |
| Lead | <1 |
| Nickel | 1.47 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 4.00 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/16/23 | Lab ID: | 308252-03 |
| Date Analyzed: | 08/17/23 | Data File: | 308252-03.143 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 0.887 |
| Barium | 4.41 |
| Cadmium | <1 |
| Chromium | 2.83 |
| Copper | 3.34 |
| Lead | <1 |
| Nickel | 2.54 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 9.69 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/16/23 | Lab ID: | 308252-04 |
| Date Analyzed: | 08/17/23 | Data File: | 308252-04.144 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 3.74 |
| Barium | 45.4 |
| Cadmium | <1 |
| Chromium | 11.1 |
| Copper | 21.6 |
| Lead | 3.09 |
| Nickel | 6.73 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 43.5 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | MW-3DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/16/23 | Lab ID: | 308252-05 |
| Date Analyzed: | 08/17/23 | Data File: | 308252-05.145 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | 0.891 |
| Barium | 4.42 |
| Cadmium | <1 |
| Chromium | 2.81 |
| Copper | 3.30 |
| Lead | <1 |
| Nickel | 2.50 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | 11.6 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | NA | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/17/23 | Lab ID: | I3-639 mb2 |
| Date Analyzed: | 08/17/23 | Data File: | I3-639 mb2.048 |
| Matrix: | Water | Instrument: | ICPMS2 |
| Units: | ug/L (ppb) | Operator: | SP |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Arsenic | <0.2 |
| Barium | <1 |
| Cadmium | <1 |
| Chromium | <1 |
| Copper | <2 |
| Lead | <1 |
| Nickel | <1 |
| Selenium | <1 |
| Silver | <1 |
| Zinc | <2.5 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252
Date Extracted: 08/21/23
Date Analyzed: 08/22/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TRACE DISSOLVED MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Dissolved Mercury |
|---|---|
| MW-1D<br>308252-01 | <0.01 |
| MW-2D<br>308252-02 | <0.01 |
| MW-3D<br>308252-03 | <0.01 |
| MW-4D<br>308252-04 | <0.01 |
| MW-3DD<br>308252-05 | <0.01 |
| Method Blank<br>I3-655 MB | <0.01 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252
Date Extracted: 08/21/23
Date Analyzed: 08/22/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TRACE TOTAL MERCURY
USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| MW-1D<br>308252-01 | <0.01 |
| MW-2D<br>308252-02 | <0.01 |
| MW-3D<br>308252-03 | <0.01 |
| MW-4D<br>308252-04 | 0.011 |
| MW-3DD<br>308252-05 | 0.013 |
| Method Blank<br>I3-655 MB | <0.01 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/17/23 | Lab ID: | 308252-01 |
| Date Analyzed: | 08/17/23 | Data File: | 081727.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 78 | 126 |
| Toluene-d8 | 102 | 84 | 115 |
| 4-Bromofluorobenzene | 110 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 k | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 k | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/17/23 | Lab ID: | 308252-02 |
| Date Analyzed: | 08/17/23 | Data File: | 081728.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 78 | 126 |
| Toluene-d8 | 100 | 84 | 115 |
| 4-Bromofluorobenzene | 108 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 k | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 k | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/17/23 | Lab ID: | 308252-03 |
| Date Analyzed: | 08/17/23 | Data File: | 081729.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 78 | 126 |
| Toluene-d8 | 101 | 84 | 115 |
| 4-Bromofluorobenzene | 109 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 k | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 k | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/17/23 | Lab ID: | 308252-04 |
| Date Analyzed: | 08/17/23 | Data File: | 081730.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 78 | 126 |
| Toluene-d8 | 101 | 84 | 115 |
| 4-Bromofluorobenzene | 108 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 k | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 k | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/17/23 | Lab ID: | 308252-05 |
| Date Analyzed: | 08/17/23 | Data File: | 081731.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 78 | 126 |
| Toluene-d8 | 99 | 84 | 115 |
| 4-Bromofluorobenzene | 105 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 k | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 k | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/17/23 | Lab ID: | 03-1941 mb |
| Date Analyzed: | 08/17/23 | Data File: | 081707.D |
| Matrix: | Water | Instrument: | GCMS11 |
| Units: | ug/L (ppb) | Operator: | LM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 78 | 126 |
| Toluene-d8 | 98 | 84 | 115 |
| 4-Bromofluorobenzene | 104 | 72 | 130 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <10 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.02 | Dibromochloromethane | <0.5 |
| Bromomethane | <5 | 1,2-Dibromoethane (EDB) | <0.01 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <50 k | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Hexane | <5 | o-Xylene | <1 |
| Methylene chloride | <5 | Styrene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Isopropylbenzene | <1 |
| trans-1,2-Dichloroethene | <1 | Bromoform | <5 |
| 1,1-Dichloroethane | <1 | n-Propylbenzene | <1 |
| 2,2-Dichloropropane | <1 | Bromobenzene | <1 |
| cis-1,2-Dichloroethene | <1 | 1,3,5-Trimethylbenzene | <1 |
| Chloroform | <1 | 1,1,2,2-Tetrachloroethane | <0.2 |
| 2-Butanone (MEK) | <20 | 1,2,3-Trichloropropane | <1 |
| 1,2-Dichloroethane (EDC) | <0.2 | 2-Chlorotoluene | <1 |
| 1,1,1-Trichloroethane | <1 | 4-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | tert-Butylbenzene | <1 |
| Carbon tetrachloride | <0.5 | 1,2,4-Trimethylbenzene | <1 |
| Benzene | <0.35 | sec-Butylbenzene | <1 |
| Trichloroethene | <0.5 | p-Isopropyltoluene | <1 |
| 1,2-Dichloropropane | <1 | 1,3-Dichlorobenzene | <1 |
| Bromodichloromethane | <0.5 | 1,4-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,2-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dibromo-3-chloropropane | <10 |
| cis-1,3-Dichloropropene | <0.4 | 1,2,4-Trichlorobenzene | <1 |
| Toluene | <1 | Hexachlorobutadiene | <0.5 |
| trans-1,3-Dichloropropene | <0.4 | Naphthalene | <1 |
| 1,1,2-Trichloroethane | <0.5 | 1,2,3-Trichlorobenzene | <1 |
| 2-Hexanone | <10 k | | |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-1D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/16/23 | Lab ID: | 308252-01 |
| Date Analyzed: | 08/16/23 | Data File: | 081618.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 83 | 11 | 173 |
| 2-Fluorobiphenyl | 80 | 25 | 128 |
| 2,4,6-Tribromophenol | 85 | 10 | 140 |
| Terphenyl-d14 | 91 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-2D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/16/23 | Lab ID: | 308252-02 |
| Date Analyzed: | 08/16/23 | Data File: | 081619.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 87 | 11 | 173 |
| 2-Fluorobiphenyl | 81 | 25 | 128 |
| 2,4,6-Tribromophenol | 89 | 10 | 140 |
| Terphenyl-d14 | 94 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/16/23 | Lab ID: | 308252-03 |
| Date Analyzed: | 08/16/23 | Data File: | 081620.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 85 | 11 | 173 |
| 2-Fluorobiphenyl | 81 | 25 | 128 |
| 2,4,6-Tribromophenol | 77 | 10 | 140 |
| Terphenyl-d14 | 96 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-4D | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/16/23 | Lab ID: | 308252-04 |
| Date Analyzed: | 08/16/23 | Data File: | 081621.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 90 | 11 | 173 |
| 2-Fluorobiphenyl | 85 | 25 | 128 |
| 2,4,6-Tribromophenol | 89 | 10 | 140 |
| Terphenyl-d14 | 93 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | MW-3DD | Client: | Haley & Aldrich, Inc |
| Date Received: | 08/15/23 | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/16/23 | Lab ID: | 308252-05 |
| Date Analyzed: | 08/16/23 | Data File: | 081622.D |
| Matrix: | Water | Instrument: | GCMS12 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 81 | 11 | 173 |
| 2-Fluorobiphenyl | 78 | 25 | 128 |
| 2,4,6-Tribromophenol | 82 | 10 | 140 |
| Terphenyl-d14 | 91 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

## Analysis For Semivolatile Compounds By EPA Method 8270E

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Haley & Aldrich, Inc |
| Date Received: | Not Applicable | Project: | Kosmos 0202832-001 |
| Date Extracted: | 08/15/23 | Lab ID: | 03-1924 mb |
| Date Analyzed: | 08/15/23 | Data File: | 081522.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Nitrobenzene-d5 | 78 | 15 | 144 |
| 2-Fluorobiphenyl | 85 | 25 | 128 |
| 2,4,6-Tribromophenol | 77 | 10 | 142 |
| Terphenyl-d14 | 107 | 41 | 138 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Naphthalene | <0.2 |
| 2-Methylnaphthalene | <0.2 |
| 1-Methylnaphthalene | <0.2 |
| Acenaphthylene | <0.02 |
| Acenaphthene | <0.02 |
| Fluorene | <0.02 |
| Phenanthrene | <0.02 |
| Anthracene | <0.02 |
| Fluoranthene | <0.02 |
| Pyrene | <0.02 |
| Benz(a)anthracene | <0.02 |
| Chrysene | <0.02 |
| Benzo(a)pyrene | <0.02 |
| Benzo(b)fluoranthene | <0.02 |
| Benzo(k)fluoranthene | <0.02 |
| Indeno(1,2,3-cd)pyrene | <0.02 |
| Dibenz(a,h)anthracene | <0.02 |
| Benzo(g,h,i)perylene | <0.04 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252
Date Extracted: 08/17/23
Date Analyzed: 08/18/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| MW-1D<br>308252-01 | 110 |
| MW-2D<br>308252-02 | 7.0 |
| MW-3D<br>308252-03 | 33 |
| MW-4D<br>308252-04 | 170 |
| MW-3DD<br>308252-05 | 91 |
| Method Blank | <5 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 308255-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Gasoline | ug/L (ppb) | 1,000 | 120 | 70-130 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Diesel Extended | ug/L (ppb) | 2,500 | 104 | 104 | 65-151 | 0 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 308252-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | <1 | 113 | 111 | 75-125 | 2 |
| Barium | ug/L (ppb) | 50 | 3.17 | 95 | 95 | 75-125 | 0 |
| Cadmium | ug/L (ppb) | 5 | <1 | 96 | 96 | 75-125 | 0 |
| Chromium | ug/L (ppb) | 20 | <1 | 94 | 94 | 75-125 | 0 |
| Copper | ug/L (ppb) | 20 | <5 | 88 | 89 | 75-125 | 1 |
| Lead | ug/L (ppb) | 10 | <1 | 94 | 94 | 75-125 | 0 |
| Nickel | ug/L (ppb) | 20 | <1 | 88 | 90 | 75-125 | 2 |
| Selenium | ug/L (ppb) | 5 | <1 | 106 | 107 | 75-125 | 1 |
| Silver | ug/L (ppb) | 5 | <1 | 92 | 92 | 75-125 | 0 |
| Zinc | ug/L (ppb) | 50 | 18.6 | 94 b | 94 b | 75-125 | 0 b |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 102 | 80-120 |
| Barium | ug/L (ppb) | 50 | 95 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 95 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 94 | 80-120 |
| Copper | ug/L (ppb) | 20 | 93 | 80-120 |
| Lead | ug/L (ppb) | 10 | 94 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 93 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 107 | 80-120 |
| Silver | ug/L (ppb) | 5 | 94 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 97 | 80-120 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 308243-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 5.66 | 82 b | 80 b | 75-125 | 2 b |
| Barium | ug/L (ppb) | 50 | 84.8 | 95 b | 90 b | 75-125 | 5 b |
| Cadmium | ug/L (ppb) | 5 | <1 | 90 | 87 | 75-125 | 3 |
| Chromium | ug/L (ppb) | 20 | 3.27 | 94 | 91 | 75-125 | 3 |
| Copper | ug/L (ppb) | 20 | 9.36 | 79 b | 77 b | 75-125 | 3 b |
| Lead | ug/L (ppb) | 10 | <1 | 85 | 82 | 75-125 | 4 |
| Nickel | ug/L (ppb) | 20 | 6.16 | 87 b | 85 b | 75-125 | 2 b |
| Selenium | ug/L (ppb) | 5 | <1 | 135 vo | 149 vo | 75-125 | 10 |
| Silver | ug/L (ppb) | 5 | <1 | 82 | 79 | 75-125 | 4 |
| Zinc | ug/L (ppb) | 50 | 14.5 | 75 b | 73 b | 75-125 | 3 b |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Arsenic | ug/L (ppb) | 10 | 96 | 80-120 |
| Barium | ug/L (ppb) | 50 | 96 | 80-120 |
| Cadmium | ug/L (ppb) | 5 | 93 | 80-120 |
| Chromium | ug/L (ppb) | 20 | 94 | 80-120 |
| Copper | ug/L (ppb) | 20 | 93 | 80-120 |
| Lead | ug/L (ppb) | 10 | 96 | 80-120 |
| Nickel | ug/L (ppb) | 20 | 94 | 80-120 |
| Selenium | ug/L (ppb) | 5 | 100 | 80-120 |
| Silver | ug/L (ppb) | 5 | 93 | 80-120 |
| Zinc | ug/L (ppb) | 50 | 95 | 80-120 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TRACE DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 308252-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.01 | 92 | 93 | 71-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 104 | 107 | 66-126 | 2 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TRACE TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 308252-02 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | <0.01 | 92 | 93 | 71-125 | 1 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.01 | 104 | 107 | 66-126 | 2 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 308255-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | <1 | 82 | 30-221 |
| Chloromethane | ug/L (ppb) | 10 | <10 | 77 | 50-150 |
| Vinyl chloride | ug/L (ppb) | 10 | <0.02 | 85 | 50-150 |
| Bromomethane | ug/L (ppb) | 10 | <5 | 90 | 50-150 |
| Chloroethane | ug/L (ppb) | 10 | <1 | 86 | 50-150 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | <1 | 86 | 50-150 |
| Acetone | ug/L (ppb) | 50 | <50 | 46 | 18-161 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | <1 | 106 | 50-150 |
| Hexane | ug/L (ppb) | 10 | <5 | 103 | 50-150 |
| Methylene chloride | ug/L (ppb) | 10 | <5 | 105 | 50-150 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 107 | 50-150 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 110 | 43-171 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | <1 | 102 | 10-211 |
| Chloroform | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | <20 | 67 | 10-192 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | <0.2 | 105 | 50-150 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| Carbon tetrachloride | ug/L (ppb) | 10 | <0.5 | 91 | 50-150 |
| Benzene | ug/L (ppb) | 10 | <0.35 | 109 | 50-150 |
| Trichloroethene | ug/L (ppb) | 10 | <0.5 | 102 | 35-149 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| Bromodichloromethane | ug/L (ppb) | 10 | <0.5 | 103 | 50-150 |
| Dibromomethane | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | <10 | 106 | 50-150 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 109 | 50-150 |
| Toluene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | <0.4 | 104 | 50-150 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | <0.5 | 101 | 50-150 |
| 2-Hexanone | ug/L (ppb) | 50 | <10 | 91 | 50-150 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| Tetrachloroethene | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| Dibromochloromethane | ug/L (ppb) | 10 | <0.5 | 95 | 50-150 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | <0.01 | 100 | 50-150 |
| Chlorobenzene | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| Ethylbenzene | ug/L (ppb) | 10 | <1 | 107 | 50-150 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | <1 | 95 | 50-150 |
| m,p-Xylene | ug/L (ppb) | 20 | <2 | 102 | 50-150 |
| o-Xylene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| Styrene | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| Isopropylbenzene | ug/L (ppb) | 10 | <1 | 99 | 50-150 |
| Bromoform | ug/L (ppb) | 10 | <5 | 95 | 50-150 |
| n-Propylbenzene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| Bromobenzene | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | <0.2 | 110 | 50-150 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | <1 | 108 | 50-150 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | <1 | 108 | 50-150 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| tert-Butylbenzene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | <1 | 105 | 50-150 |
| sec-Butylbenzene | ug/L (ppb) | 10 | <1 | 102 | 50-150 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | <1 | 103 | 50-150 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 101 | 50-150 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | <10 | 105 | 50-150 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 98 | 50-150 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | <0.5 | 94 | 50-150 |
| Naphthalene | ug/L (ppb) | 10 | <1 | 100 | 50-150 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | <1 | 95 | 50-150 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 10 | 85 | 78 | 46-206 | 9 |
| Chloromethane | ug/L (ppb) | 10 | 74 | 74 | 59-132 | 0 |
| Vinyl chloride | ug/L (ppb) | 10 | 84 | 83 | 64-142 | 1 |
| Bromomethane | ug/L (ppb) | 10 | 90 | 91 | 50-197 | 1 |
| Chloroethane | ug/L (ppb) | 10 | 85 | 88 | 70-130 | 3 |
| Trichlorofluoromethane | ug/L (ppb) | 10 | 89 | 88 | 51-159 | 1 |
| Acetone | ug/L (ppb) | 50 | 47 | 46 | 10-140 | 2 |
| 1,1-Dichloroethene | ug/L (ppb) | 10 | 105 | 102 | 64-140 | 3 |
| Hexane | ug/L (ppb) | 10 | 102 | 99 | 54-136 | 3 |
| Methylene chloride | ug/L (ppb) | 10 | 106 | 102 | 43-134 | 4 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 10 | 105 | 101 | 70-130 | 4 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 10 | 107 | 105 | 70-130 | 2 |
| 1,1-Dichloroethane | ug/L (ppb) | 10 | 103 | 101 | 70-130 | 2 |
| 2,2-Dichloropropane | ug/L (ppb) | 10 | 116 | 110 | 64-148 | 5 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 10 | 102 | 100 | 70-130 | 2 |
| Chloroform | ug/L (ppb) | 10 | 97 | 96 | 70-130 | 1 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 62 | 63 | 47-112 | 2 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 10 | 103 | 102 | 70-130 | 1 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 10 | 99 | 96 | 70-130 | 3 |
| 1,1-Dichloropropene | ug/L (ppb) | 10 | 97 | 94 | 70-130 | 3 |
| Carbon tetrachloride | ug/L (ppb) | 10 | 93 | 90 | 70-130 | 3 |
| Benzene | ug/L (ppb) | 10 | 107 | 105 | 70-130 | 2 |
| Trichloroethene | ug/L (ppb) | 10 | 102 | 99 | 70-130 | 3 |
| 1,2-Dichloropropane | ug/L (ppb) | 10 | 100 | 97 | 70-130 | 3 |
| Bromodichloromethane | ug/L (ppb) | 10 | 97 | 98 | 70-130 | 1 |
| Dibromomethane | ug/L (ppb) | 10 | 99 | 95 | 70-130 | 4 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 94 | 99 | 68-130 | 5 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 10 | 105 | 101 | 69-131 | 4 |
| Toluene | ug/L (ppb) | 10 | 110 | 107 | 70-130 | 3 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 10 | 106 | 108 | 70-130 | 2 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 10 | 104 | 101 | 70-130 | 3 |
| 2-Hexanone | ug/L (ppb) | 50 | 90 | 88 | 45-138 | 2 |
| 1,3-Dichloropropane | ug/L (ppb) | 10 | 103 | 100 | 70-130 | 3 |
| Tetrachloroethene | ug/L (ppb) | 10 | 104 | 101 | 70-130 | 3 |
| Dibromochloromethane | ug/L (ppb) | 10 | 103 | 100 | 60-148 | 3 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 10 | 104 | 102 | 70-130 | 2 |
| Chlorobenzene | ug/L (ppb) | 10 | 101 | 99 | 70-130 | 2 |
| Ethylbenzene | ug/L (ppb) | 10 | 112 | 109 | 70-130 | 3 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 10 | 97 | 98 | 70-130 | 1 |
| m,p-Xylene | ug/L (ppb) | 20 | 107 | 104 | 70-130 | 3 |
| o-Xylene | ug/L (ppb) | 10 | 107 | 104 | 70-130 | 3 |
| Styrene | ug/L (ppb) | 10 | 101 | 98 | 70-130 | 3 |
| Isopropylbenzene | ug/L (ppb) | 10 | 106 | 101 | 70-130 | 5 |
| Bromoform | ug/L (ppb) | 10 | 98 | 94 | 69-138 | 4 |
| n-Propylbenzene | ug/L (ppb) | 10 | 105 | 100 | 70-130 | 5 |
| Bromobenzene | ug/L (ppb) | 10 | 97 | 94 | 70-130 | 3 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 10 | 106 | 100 | 70-130 | 6 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 10 | 109 | 103 | 70-130 | 6 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 10 | 106 | 102 | 70-130 | 4 |
| 2-Chlorotoluene | ug/L (ppb) | 10 | 108 | 103 | 70-130 | 5 |
| 4-Chlorotoluene | ug/L (ppb) | 10 | 104 | 98 | 70-130 | 6 |
| tert-Butylbenzene | ug/L (ppb) | 10 | 103 | 98 | 70-130 | 5 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 10 | 107 | 99 | 70-130 | 8 |
| sec-Butylbenzene | ug/L (ppb) | 10 | 105 | 100 | 70-130 | 5 |
| p-Isopropyltoluene | ug/L (ppb) | 10 | 105 | 97 | 70-130 | 8 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 10 | 101 | 96 | 70-130 | 5 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 10 | 102 | 97 | 70-130 | 5 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 10 | 100 | 97 | 70-130 | 3 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 10 | 96 | 91 | 70-130 | 5 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 10 | 99 | 94 | 70-130 | 5 |
| Hexachlorobutadiene | ug/L (ppb) | 10 | 101 | 94 | 70-130 | 7 |
| Naphthalene | ug/L (ppb) | 10 | 102 | 96 | 70-130 | 6 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 10 | 101 | 91 | 70-130 | 10 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Naphthalene | ug/L (ppb) | 5 | 77 | 76 | 50-104 | 1 |
| 2-Methylnaphthalene | ug/L (ppb) | 5 | 92 | 93 | 52-113 | 1 |
| 1-Methylnaphthalene | ug/L (ppb) | 5 | 100 | 101 | 51-115 | 1 |
| Acenaphthylene | ug/L (ppb) | 5 | 91 | 93 | 60-114 | 2 |
| Acenaphthene | ug/L (ppb) | 5 | 86 | 88 | 57-110 | 2 |
| Fluorene | ug/L (ppb) | 5 | 95 | 98 | 61-115 | 3 |
| Phenanthrene | ug/L (ppb) | 5 | 91 | 94 | 63-113 | 3 |
| Anthracene | ug/L (ppb) | 5 | 93 | 97 | 65-117 | 4 |
| Fluoranthene | ug/L (ppb) | 5 | 95 | 99 | 68-121 | 4 |
| Pyrene | ug/L (ppb) | 5 | 101 | 109 | 62-133 | 8 |
| Benz(a)anthracene | ug/L (ppb) | 5 | 97 | 104 | 66-131 | 7 |
| Chrysene | ug/L (ppb) | 5 | 107 | 113 | 66-129 | 5 |
| Benzo(a)pyrene | ug/L (ppb) | 5 | 95 | 98 | 66-129 | 3 |
| Benzo(b)fluoranthene | ug/L (ppb) | 5 | 85 | 91 | 55-144 | 7 |
| Benzo(k)fluoranthene | ug/L (ppb) | 5 | 92 | 93 | 58-139 | 1 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 5 | 92 | 100 | 62-136 | 8 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 5 | 95 | 101 | 55-146 | 6 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 5 | 86 | 94 | 58-137 | 9 |

Date of Report: 08/31/23
Date Received: 08/15/23
Project: Kosmos 0202832-001, F&BI 308252

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: 308252-02 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| TSS | mg/L (ppm) | 7.0 | 6.0 | 15 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| TSS | mg/L (ppm) | 20 | 106 | 35-146 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

308252

# SAMPLE CHAIN OF CUSTODY

08/15/23

F41 VW2/K2

Page # 1 of 1

Report To Angie Goodwin

Company H&A

Address

City, State, ZIP

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: Kosmos

PO #: 0202832-009

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

**TURNAROUND TIME**

☒ Standard turnaround

☐ RUSH

Rush charges authorized by:

**SAMPLE DISPOSAL**

☐ Archive samples

☐ Other

Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | EPH | VPH | Tot/Dis metals | TSS/TrNT | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1D | 01 A-I | 8/15/23 | 1200 | H2O | 16 | X | X | | | X | X | | X | X | X | X | Cr VI Sample #230 |
| MW-2D | 02 | | 1350 | | | X | X | | | X | X | | X | X | X | X | As, Ba, Cd, Cr, |
| MW-3D | 03 | | 1530 | | | X | X | | | X | X | | X | X | X | X | Cu, Pb, Hg, Ni, |
| MW-4D | 04 | | 1710 | | | X | X | | | X | X | | X | X | X | X | Se, Ag, Zn |
| MW-300 | 05 | | 1600 | | | X | X | | | X | X | | X | X | X | X | |
| Trip Blank | 06 | | | water | 1 | | | | | | | | | | | | Added at lab (AP) |
| | | | | | | | Samples received at 4 °C | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Andrew Jakabosky | H&A | 8/15/23 | 0800 |
| Received by: | Eric Young | FaB | 8/15/23 | 0800 |
| Relinquished by: | | | | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

**Friedman & Bruya**
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

**RE: 308252**
**Work Order Number: 2308213**

August 30, 2023

**Attention Michael Erdahl:**

Fremont Analytical, Inc. received 6 sample(s) on 8/16/2023 for the analyses presented in the following report.

***Extractable Petroleum Hydrocarbons by NWEPH***
***Hexavalent Chromium by SM 3500 Cr B***
***Volatile Petroleum Hydrocarbons by NWVPH***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

**Date:** *08/30/2023*

**CLIENT:** Friedman & Bruya
**Project:** 308252
**Work Order:** 2308213

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 2308213-001 | MW-1D | 08/15/2023 12:30 PM | 08/16/2023 8:30 AM |
| 2308213-002 | MW-2D | 08/15/2023 1:50 PM | 08/16/2023 8:30 AM |
| 2308213-003 | MW-3D | 08/15/2023 3:30 PM | 08/16/2023 8:30 AM |
| 2308213-004 | MW-4D | 08/15/2023 5:10 PM | 08/16/2023 8:30 AM |
| 2308213-005 | MW-3DD | 08/15/2023 4:00 PM | 08/16/2023 8:30 AM |
| 2308213-006 | Trip BLank | 08/15/2023 12:00 AM | 08/16/2023 8:30 AM |

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

# Case Narrative

WO#: **2308213**
Date: **8/30/2023**

**CLIENT:** Friedman & Bruya
**Project:** 308252

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

**CLIENT:** Friedman & Bruya
**Project:** 308252

**Lab ID:** 2308213-001 **Collection Date:** 8/15/2023 12:30:00 PM
**Client Sample ID:** **MW-1D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 41169 | | Analyst: AP |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.3 | | µg/L | 1 | 8/21/2023 11:20:04 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.7 | | µg/L | 1 | 8/21/2023 11:20:04 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.7 | | µg/L | 1 | 8/21/2023 11:20:04 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.7 | | µg/L | 1 | 8/21/2023 11:20:04 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.7 | | µg/L | 1 | 8/21/2023 11:20:04 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.3 | | µg/L | 1 | 8/18/2023 5:31:46 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:31:46 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:31:46 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:31:46 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:31:46 PM |
| Surr: 1-Chlorooctadecane | 28.7 | 50 - 150 | S | %Rec | 1 | 8/21/2023 11:20:04 AM |
| Surr: o-Terphenyl | 56.0 | 50 - 150 | | %Rec | 1 | 8/18/2023 5:31:46 PM |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 41210 | | Analyst: MS |
| Aliphatic Hydrocarbon (C5-C6) | ND | 40.0 | | µg/L | 1 | 8/16/2023 11:30:00 PM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 40.0 | | µg/L | 1 | 8/16/2023 11:30:00 PM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 40.0 | | µg/L | 1 | 8/16/2023 11:30:00 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | µg/L | 1 | 8/16/2023 11:30:00 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 40.0 | | µg/L | 1 | 8/16/2023 11:30:00 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | µg/L | 1 | 8/16/2023 11:30:00 PM |
| Aromatic Hydrocarbon (C12-C13) | ND | 40.0 | | µg/L | 1 | 8/16/2023 11:30:00 PM |
| Surr: 2,5-dibromotoluene | 87.8 | 60 - 140 | | %Rec | 1 | 8/16/2023 11:30:00 PM |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R85956 | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 8/16/2023 9:11:00 AM |

**CLIENT:** Friedman & Bruya
**Project:** 308252

**Lab ID:** 2308213-002 **Collection Date:** 8/15/2023 1:50:00 PM
**Client Sample ID:** **MW-2D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 41169 | | Analyst: AP |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.4 | | µg/L | 1 | 8/18/2023 5:53:41 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:53:41 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:53:41 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:53:41 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:53:41 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.4 | | µg/L | 1 | 8/18/2023 5:53:41 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:53:41 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:53:41 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:53:41 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.7 | | µg/L | 1 | 8/18/2023 5:53:41 PM |
| Surr: 1-Chlorooctadecane | 71.4 | 50 - 150 | | %Rec | 1 | 8/18/2023 5:53:41 PM |
| Surr: o-Terphenyl | 73.7 | 50 - 150 | | %Rec | 1 | 8/18/2023 5:53:41 PM |
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 41210 | | Analyst: MS |
| Aliphatic Hydrocarbon (C5-C6) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:06:00 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:06:00 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:06:00 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:06:00 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:06:00 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:06:00 AM |
| Aromatic Hydrocarbon (C12-C13) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:06:00 AM |
| Surr: 2,5-dibromotoluene | 80.7 | 60 - 140 | | %Rec | 1 | 8/17/2023 12:06:00 AM |
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R85956 | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 8/16/2023 9:26:00 AM |

**CLIENT:** Friedman & Bruya
**Project:** 308252

**Lab ID:** 2308213-003 **Collection Date:** 8/15/2023 3:30:00 PM
**Client Sample ID:** **MW-3D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 41169 | | Analyst: AP |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.5 | | µg/L | 1 | 8/21/2023 11:41:38 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.7 | | µg/L | 1 | 8/21/2023 11:41:38 AM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.7 | | µg/L | 1 | 8/21/2023 11:41:38 AM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.7 | | µg/L | 1 | 8/21/2023 11:41:38 AM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.7 | | µg/L | 1 | 8/21/2023 11:41:38 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.5 | | µg/L | 1 | 8/18/2023 6:15:38 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.7 | | µg/L | 1 | 8/18/2023 6:15:38 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.7 | | µg/L | 1 | 8/18/2023 6:15:38 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.7 | | µg/L | 1 | 8/18/2023 6:15:38 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.7 | | µg/L | 1 | 8/18/2023 6:15:38 PM |
| Surr: 1-Chlorooctadecane | 41.3 | 50 - 150 | S | %Rec | 1 | 8/21/2023 11:41:38 AM |
| Surr: o-Terphenyl | 70.2 | 50 - 150 | | %Rec | 1 | 8/18/2023 6:15:38 PM |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 41210 | | Analyst: MS |
| Aliphatic Hydrocarbon (C5-C6) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:42:00 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:42:00 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:42:00 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:42:00 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:42:00 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:42:00 AM |
| Aromatic Hydrocarbon (C12-C13) | ND | 40.0 | | µg/L | 1 | 8/17/2023 12:42:00 AM |
| Surr: 2,5-dibromotoluene | 83.6 | 60 - 140 | | %Rec | 1 | 8/17/2023 12:42:00 AM |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R85956 | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 8/16/2023 9:31:00 AM |

**CLIENT:** Friedman & Bruya
**Project:** 308252

**Lab ID:** 2308213-004 **Collection Date:** 8/15/2023 5:10:00 PM
**Client Sample ID:** **MW-4D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 41169 | | Analyst: AP |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.5 | | µg/L | 1 | 8/21/2023 12:03:17 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.8 | | µg/L | 1 | 8/21/2023 12:03:17 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.8 | | µg/L | 1 | 8/21/2023 12:03:17 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.8 | | µg/L | 1 | 8/21/2023 12:03:17 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.8 | | µg/L | 1 | 8/21/2023 12:03:17 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.5 | | µg/L | 1 | 8/21/2023 11:20:04 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.8 | | µg/L | 1 | 8/21/2023 11:20:04 AM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.8 | | µg/L | 1 | 8/21/2023 11:20:04 AM |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.8 | | µg/L | 1 | 8/21/2023 11:20:04 AM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.8 | | µg/L | 1 | 8/21/2023 11:20:04 AM |
| Surr: 1-Chlorooctadecane | 19.9 | 50 - 150 | S | %Rec | 1 | 8/21/2023 12:03:17 PM |
| Surr: o-Terphenyl | 63.6 | 50 - 150 | | %Rec | 1 | 8/21/2023 11:20:04 AM |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 41210 | | Analyst: MS |
| Aliphatic Hydrocarbon (C5-C6) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:18:00 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:18:00 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:18:00 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:18:00 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:18:00 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:18:00 AM |
| Aromatic Hydrocarbon (C12-C13) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:18:00 AM |
| Surr: 2,5-dibromotoluene | 80.8 | 60 - 140 | | %Rec | 1 | 8/17/2023 1:18:00 AM |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R85956 | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 8/16/2023 9:36:00 AM |

**CLIENT:** Friedman & Bruya
**Project:** 308252

**Lab ID:** 2308213-005 **Collection Date:** 8/15/2023 4:00:00 PM
**Client Sample ID:** **MW-3DD** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Extractable Petroleum Hydrocarbons by NWEPH** | | | | Batch ID: 41169 | | Analyst: AP |
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.4 | | µg/L | 1 | 8/21/2023 12:25:08 PM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.7 | | µg/L | 1 | 8/21/2023 12:25:08 PM |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.7 | | µg/L | 1 | 8/21/2023 12:25:08 PM |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.7 | | µg/L | 1 | 8/21/2023 12:25:08 PM |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.7 | | µg/L | 1 | 8/21/2023 12:25:08 PM |
| Aromatic Hydrocarbon (C8-C10) | ND | 79.4 | | µg/L | 1 | 8/18/2023 6:59:43 PM |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.7 | | µg/L | 1 | 8/18/2023 6:59:43 PM |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.7 | | µg/L | 1 | 8/18/2023 6:59:43 PM |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.7 | | µg/L | 1 | 8/18/2023 6:59:43 PM |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.7 | | µg/L | 1 | 8/18/2023 6:59:43 PM |
| Surr: 1-Chlorooctadecane | 19.0 | 50 - 150 | S | %Rec | 1 | 8/21/2023 12:25:08 PM |
| Surr: o-Terphenyl | 50.2 | 50 - 150 | | %Rec | 1 | 8/18/2023 6:59:43 PM |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Volatile Petroleum Hydrocarbons by NWVPH** | | | | Batch ID: 41210 | | Analyst: MS |
| Aliphatic Hydrocarbon (C5-C6) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:54:00 AM |
| Aliphatic Hydrocarbon (C6-C8) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:54:00 AM |
| Aliphatic Hydrocarbon (C8-C10) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:54:00 AM |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:54:00 AM |
| Aromatic Hydrocarbon (C8-C10) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:54:00 AM |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:54:00 AM |
| Aromatic Hydrocarbon (C12-C13) | ND | 40.0 | | µg/L | 1 | 8/17/2023 1:54:00 AM |
| Surr: 2,5-dibromotoluene | 79.0 | 60 - 140 | | %Rec | 1 | 8/17/2023 1:54:00 AM |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Hexavalent Chromium by SM 3500 Cr B** | | | | Batch ID: R85956 | | Analyst: ME |
| Chromium, Hexavalent | ND | 0.0500 | | mg/L | 1 | 8/16/2023 9:41:00 AM |

**Work Order:** 2308213
**CLIENT:** Friedman & Bruya
**Project:** 308252

# QC SUMMARY REPORT

## Hexavalent Chromium by SM 3500 Cr B

| Sample ID: **MB-85956** | SampType: **MBLK** | | | Units: **mg/L** | | Prep Date: **8/16/2023** | | RunNo: **85956** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **R85956** | | | | | Analysis Date: **8/16/2023** | | SeqNo: **1793942** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | | | | |

| Sample ID: **2308213-001CMS** | SampType: **MS** | | | Units: **mg/L** | | Prep Date: **8/16/2023** | | RunNo: **85956** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1D** | Batch ID: **R85956** | | | | | Analysis Date: **8/16/2023** | | SeqNo: **1793944** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.245 | 0.0500 | 0.2500 | 0.04380 | 80.5 | 71.7 | 126 | | | | |

| Sample ID: **2308213-001CMSD** | SampType: **MSD** | | | Units: **mg/L** | | Prep Date: **8/16/2023** | | RunNo: **85956** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-1D** | Batch ID: **R85956** | | | | | Analysis Date: **8/16/2023** | | SeqNo: **1793945** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.234 | 0.0500 | 0.2500 | 0.04380 | 76.2 | 71.7 | 126 | 0.2451 | 4.46 | 20 | |

| Sample ID: **LCS-85956** | SampType: **LCS** | | | Units: **mg/L** | | Prep Date: **8/16/2023** | | RunNo: **85956** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R85956** | | | | | Analysis Date: **8/16/2023** | | SeqNo: **1793936** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | 0.244 | 0.0500 | 0.2500 | 0 | 97.5 | 84.9 | 112 | | | | |

| Sample ID: **2308213-004CDUP** | SampType: **DUP** | | | Units: **mg/L** | | Prep Date: **8/16/2023** | | RunNo: **85956** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **MW-4D** | Batch ID: **R85956** | | | | | Analysis Date: **8/16/2023** | | SeqNo: **1794193** | | |
| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chromium, Hexavalent | ND | 0.0500 | | | | | | 0 | | 20 | |

**Work Order:** 2308213
**CLIENT:** Friedman & Bruya
**Project:** 308252

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **LCS-41169** | SampType: **LCS** | Units: **µg/L** | Prep Date: **8/10/2023** | RunNo: **85955** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **41169** | | Analysis Date: **8/14/2023** | SeqNo: **1793800** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 230 | 80.0 | 999.5 | 0 | 23.1 | 15.3 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 235 | 40.0 | 499.8 | 0 | 47.0 | 32.2 | 130 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 316 | 40.0 | 499.8 | 0 | 63.2 | 41 | 106 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 322 | 40.0 | 499.8 | 0 | 64.5 | 47.9 | 103 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 330 | 40.0 | 499.8 | 0 | 66.0 | 33.4 | 142 | | | | |
| Surr: 1-Chlorooctadecane | 279 | | 399.8 | | 69.9 | 50 | 150 | | | | |

| Sample ID: **MB-41169** | SampType: **MBLK** | Units: **µg/L** | Prep Date: **8/10/2023** | RunNo: **85955** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **41169** | | Analysis Date: **8/14/2023** | SeqNo: **1793805** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 79.3 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 39.6 | | 0 | 0 | | | | | | |
| Surr: 1-Chlorooctadecane | 199 | | 396.4 | | 50.2 | 50 | 150 | | | | |

| Sample ID: **MB-41169** | SampType: **MBLK** | Units: **µg/L** | Prep Date: **8/10/2023** | RunNo: **85955** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **41169** | | Analysis Date: **8/14/2023** | SeqNo: **1793823** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 79.3 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C12-C16) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C16-C21) | ND | 39.6 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C21-C34) | ND | 39.6 | | 0 | 0 | | | | | | |
| Surr: o-Terphenyl | 330 | | 396.4 | | 83.2 | 50 | 150 | | | | |

**Work Order:** 2308213
**CLIENT:** Friedman & Bruya
**Project:** 308252

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

| Sample ID: **LCS-41169** | SampType: **LCS** | Units: **µg/L** | Prep Date: **8/10/2023** | RunNo: **85955** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **41169** | | Analysis Date: **8/14/2023** | SeqNo: **1793824** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 275 | 80.0 | 999.5 | 0 | 27.5 | 23.9 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 283 | 40.0 | 499.8 | 0 | 56.7 | 41.8 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 298 | 40.0 | 499.8 | 0 | 59.7 | 36.7 | 113 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 323 | 40.0 | 499.8 | 0 | 64.6 | 52.2 | 124 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 367 | 40.0 | 499.8 | 0 | 73.4 | 50.5 | 139 | | | | |
| Surr: o-Terphenyl | 230 | | 399.8 | | 57.5 | 50 | 150 | | | | |

| Sample ID: **2308105-001AMS** | SampType: **MS** | Units: **µg/L** | Prep Date: **8/10/2023** | RunNo: **85955** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **41169** | | Analysis Date: **8/16/2023** | SeqNo: **1794328** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | 259 | 90.7 | 1,133 | 0 | 22.8 | 5 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 265 | 45.3 | 566.7 | 0 | 46.8 | 17.1 | 108 | | | | |
| Aliphatic Hydrocarbon (C12-C16) | 358 | 45.3 | 566.7 | 20.66 | 59.5 | 35.7 | 111 | | | | |
| Aliphatic Hydrocarbon (C16-C21) | 374 | 45.3 | 566.7 | 0 | 66.0 | 41.1 | 110 | | | | |
| Aliphatic Hydrocarbon (C21-C34) | 384 | 45.3 | 566.7 | 90.10 | 51.8 | 31.4 | 125 | | | | |
| Surr: 1-Chlorooctadecane | 330 | | 453.3 | | 72.8 | 50 | 150 | | | | |

| Sample ID: **2308105-001AMS** | SampType: **MS** | Units: **µg/L** | Prep Date: **8/10/2023** | RunNo: **85988** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **41169** | | Analysis Date: **8/16/2023** | SeqNo: **1794344** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | 541 | 90.7 | 1,133 | 35.07 | 44.6 | 9.66 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 452 | 45.3 | 566.7 | 0 | 79.8 | 18 | 105 | | | | |
| Aromatic Hydrocarbon (C12-C16) | 595 | 45.3 | 566.7 | 82.84 | 90.4 | 45.3 | 109 | | | | |
| Aromatic Hydrocarbon (C16-C21) | 574 | 45.3 | 566.7 | 52.83 | 92.0 | 40.6 | 118 | | | | |
| Aromatic Hydrocarbon (C21-C34) | 540 | 45.3 | 566.7 | 42.02 | 87.9 | 38.1 | 137 | | | | |
| Surr: o-Terphenyl | 482 | | 453.3 | | 106 | 50 | 150 | | | | |

**Work Order:** 2308213
**CLIENT:** Friedman & Bruya
**Project:** 308252

# QC SUMMARY REPORT

## Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2308105-003ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **8/10/2023** RunNo: **85955**
Client ID: **BATCH** Batch ID: **41169** Analysis Date: **8/16/2023** SeqNo: **1794331**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C8-C10) | ND | 88.8 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 44.4 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C12-C16) | ND | 44.4 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C16-C21) | ND | 44.4 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C21-C34) | ND | 44.4 | | 0 | 0 | | | 0 | | 25 | |
| Surr: 1-Chlorooctadecane | 148 | | 444.1 | | 33.3 | 50 | 150 | | 0 | | S |

**NOTES:**
S - Outlying surrogate recovery(ies) observed.

Sample ID: **2308105-003ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **8/10/2023** RunNo: **85988**
Client ID: **BATCH** Batch ID: **41169** Analysis Date: **8/16/2023** SeqNo: **1794347**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C8-C10) | ND | 88.8 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C10-C12) | ND | 44.4 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C12-C16) | ND | 44.4 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C16-C21) | ND | 44.4 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C21-C34) | ND | 44.4 | | 0 | 0 | | | 0 | | 25 | |
| Surr: o-Terphenyl | 297 | | 444.1 | | 66.9 | 50 | 150 | | 0 | | |

**Work Order:** 2308213
**CLIENT:** Friedman & Bruya
**Project:** 308252

# QC SUMMARY REPORT

## Volatile Petroleum Hydrocarbons by NWVPH

| Sample ID: **LCS-41210** | SampType: **LCS** | Units: **µg/L** | Prep Date: **8/15/2023** | RunNo: **86130** |
|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **41210** | | Analysis Date: **8/16/2023** | SeqNo: **1797399** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | 334 | 40.0 | 400.0 | 0 | 83.4 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C6-C8) | 207 | 40.0 | 200.0 | 0 | 104 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C8-C10) | 170 | 40.0 | 200.0 | 0 | 84.9 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 205 | 40.0 | 200.0 | 0 | 102 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C8-C10) | 977 | 40.0 | 1,000 | 0 | 97.7 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 164 | 40.0 | 200.0 | 0 | 81.9 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C13) | 163 | 40.0 | 200.0 | 0 | 81.7 | 70 | 130 | | | | |
| Surr: 2,5-dibromotoluene | 46.3 | | 50.00 | | 92.5 | 60 | 140 | | | | |

| Sample ID: **MB-41210** | SampType: **MBLK** | Units: **µg/L** | Prep Date: **8/15/2023** | RunNo: **86130** |
|---|---|---|---|---|
| Client ID: **MBLKW** | Batch ID: **41210** | | Analysis Date: **8/16/2023** | SeqNo: **1797386** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C6-C8) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C8-C10) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C8-C10) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | | | | |
| Aromatic Hydrocarbon (C12-C13) | ND | 40.0 | | 0 | 0 | | | | | | |
| Surr: 2,5-dibromotoluene | 38.6 | | 50.00 | | 77.3 | 60 | 140 | | | | |

| Sample ID: **2308171-001ADUP** | SampType: **DUP** | Units: **µg/L** | Prep Date: **8/15/2023** | RunNo: **86130** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **41210** | | Analysis Date: **8/16/2023** | SeqNo: **1797388** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | ND | 40.0 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C6-C8) | ND | 40.0 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C8-C10) | ND | 40.0 | | 0 | 0 | | | 0 | | 25 | |
| Aliphatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C8-C10) | ND | 40.0 | | 0 | 0 | | | 0 | | 25 | |

**Work Order:** 2308213
**CLIENT:** Friedman & Bruya
**Project:** 308252

# QC SUMMARY REPORT

## Volatile Petroleum Hydrocarbons by NWVPH

| Sample ID: **2308171-001ADUP** | SampType: **DUP** | Units: **µg/L** | Prep Date: **8/15/2023** | RunNo: **86130** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **41210** | | Analysis Date: **8/16/2023** | SeqNo: **1797388** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aromatic Hydrocarbon (C10-C12) | ND | 40.0 | | 0 | 0 | | | 0 | | 25 | |
| Aromatic Hydrocarbon (C12-C13) | ND | 40.0 | | 0 | 0 | | | 0 | | 25 | |
| Surr: 2,5-dibromotoluene | 40.2 | | 50.00 | | 80.4 | 60 | 140 | | 0 | 0 | |

| Sample ID: **2308171-002AMS** | SampType: **MS** | Units: **µg/L** | Prep Date: **8/15/2023** | RunNo: **86130** |
|---|---|---|---|---|
| Client ID: **BATCH** | Batch ID: **41210** | | Analysis Date: **8/16/2023** | SeqNo: **1797390** |

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aliphatic Hydrocarbon (C5-C6) | 353 | 40.0 | 400.0 | 58.49 | 73.5 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C6-C8) | 191 | 40.0 | 200.0 | 27.80 | 81.5 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C8-C10) | 143 | 40.0 | 200.0 | 0 | 71.3 | 70 | 130 | | | | |
| Aliphatic Hydrocarbon (C10-C12) | 206 | 40.0 | 200.0 | 0 | 103 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C8-C10) | 1,110 | 40.0 | 1,000 | 20.34 | 109 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C10-C12) | 170 | 40.0 | 200.0 | 0 | 85.2 | 70 | 130 | | | | |
| Aromatic Hydrocarbon (C12-C13) | 178 | 40.0 | 200.0 | 0 | 89.1 | 70 | 130 | | | | |
| Surr: 2,5-dibromotoluene | 46.0 | | 50.00 | | 92.1 | 60 | 140 | | | | |

Fremont Analytical
An Alliance Technical Group Company

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | FB | Work Order Number: | 2308213 |
| Logged by: | Clare Griggs | Date Received: | 8/16/2023 8:30:00 AM |

## Chain of Custody

| | | | | |
|---|---|---|---|---|
| 1. | Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | How was the sample delivered? | Client | | |

## Log In

| | | | | |
|---|---|---|---|---|
| 3. | Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact) | Yes ☐ | No ☐ | Not Present ☑ |
| 4. | Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 5. | Were all items received at a temperature of >2°C to 6°C * | Yes ☑ | No ☐ | NA ☐ |
| 6. | Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 7. | Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 8. | Are samples properly preserved? | Yes ☑ | No ☐ | |
| 9. | Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 10. | Is there headspace in the VOA vials? | Yes ☐ | No ☑ | NA ☐ |
| 11. | Did all samples containers arrive in good condition(unbroken)? | Yes ☑ | No ☐ | |
| 12. | Does paperwork match bottle labels? | Yes ☑ | No ☐ | |
| 13. | Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 14. | Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 15. | Were all holding times able to be met? | Yes ☑ | No ☐ | |

## Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☑ No ☐ NA ☐

| | | | |
|---|---|---|---|
| Person Notified: | Michael Erdahl | Date: | 8/16/2023 |
| By Whom: | Clare Griggs | Via: | ☑ eMail ☐ Phone ☐ Fax ☐ In Person |
| Regarding: | Did not receive sample that matches COC sample MW-5D at 16:00. Did receive MW-3DD | | |
| Client Instructions: | | | |

17. Additional remarks:

Item Information

| Item # | Temp ºC |
|---|---|
| Sample | 2.0 |

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2308213





Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER: Fremont

PROJECT NAME/NO.: 308252

PO #: D-416

REMARKS: NEED EIM + EQUIS
Please Email Results ef 8/15

TURNAROUND TIME
X Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Hex Cr | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1D | | 8/5/23 | 12:30 | W | 5 | | ✓ | ✓ | ✓ | | | | | | | CrVI to MDL |
| MW-2D | | | 13:50 | W | 5 | | ✓ | ✓ | ✓ | | | | | | | per ME |
| MW-3D | | | 15:30 | W | 5 | | ✓ | ✓ | ✓ | | | | | | | mail 8/16 |
| MW-4D | | | 17:10 | W | 5 | | ✓ | ✓ | ✓ | | | | | | | ↓ |
| MW-5D | | ↓ | 16:00 | W | 5 | | ✓ | ✓ | ✓ | | | | | | | ↓ |
| | | | | | | | | | | | | | | | | |
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*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | ~~Michael Erdahl~~ Eric Young | Friedman & Bruya | 8/5/23 | 08:20 |
| Received by: | ETC | Emma Tuck | FAI/ATG | 8/16/23 | 8:30 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2308213





Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER: Fremont

PROJECT NAME/NO.: 308252

PO #: D-416

REMARKS: NEED EIM + EQUIS
Please Email Results ef 8/15

TURNAROUND TIME
X Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

| Sample ID | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: Dioxins/Furans | EPH | VPH | Hex Cr | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1D | | 8/5/23 | 12:30 | W | 5 | | ✓ | ✓ | ✓ | | | | | | CrVI to MDL per ME mwdl 8/16 |
| MW-2D | | | 13:50 | W | 5 | | ✓ | ✓ | ✓ | | | | | | |
| MW-3D | | | 15:30 | W | 5 | | ✓ | ✓ | ✓ | | | | | | |
| MW-4D | | | 17:10 | W | 5 | | ✓ | ✓ | ✓ | | | | | | |
| ~~MW-5D~~ MW-3DD | | ↓ | 16:00 | W | 5 | | ✓ | ✓ | ✓ | | | | | | ↓ |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
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edit per ME 8/16/23 -cg

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | ~~Michael Erdahl~~ Eric Young | Friedman & Bruya | 8/5/23 | 08:20 |
| Received by: | ETC | Emma Tuck | FAI/ATG | 8/16/23 | 8:~~30~~ |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# APPENDIX G
# MTCA TPH Calculations

**A4 Soil Cleanup Levels: Summary of Results. Refer to WAC 173-340-720, 740, 745, 747**

**Date:** 04/16/24
**Site Name:** Kosmos
**Sample Name:** TP-24-S1
**Measured Soil TPH Concentration, mg/kg:** 3,229.87

## Summary of Calculation Results

| Exposure Pathway | Method/Goal | Protective TPH Conc (mg/kg) | With Measured Soil Conc | |
|---|---|---|---|---|
| | | | HI or Risk | Pass or Fail |
| *Soil Direct Contact* Protection of Soil Incidental Ingestion and Dermal Contact: Human Health | **Method B: Unrestricted Land Use** | | | |
| | TPH Soil Cleanup Level (@ HI =1) | 2,200 | 1.5E+00 | **Fail** |
| | Cancer Risk (1) | | 1.1E-06 | **Fail** |
| | **Method C: Industrial Land Use** | | | |
| | TPH Soil Cleanup Level (@ HI = 1) | 39,000 | 8.3E-02 | Pass |
| | Cancer Risk (1) | | 5.1E-08 | Pass |
| *Soil Leaching* Protection of Groundwater Quality | **Soil Concentration Protective of Target TPH Groundwater Concentration** | | | |
| | *Protective TPH Soil Concentration, mg/kg =* | *Use Residual Saturation Conc* | --- | Note 2 |
| | | | *Soil Leaching is not a critical pathway.* | |
| | 100% NAPL TPH concentration (mg/kg) is: | 77,000.0 | | |
| | *Target TPH Groundwater Concentration (µg/L)* | | | |
| | 500 Method A Potable Groundwater | | | |
| Remark: | *Concentrations of "weathered" deisel range organics provided in the Ecology Memorandum No. 23 that are protective for Freshwater are higher than the more restrictive default Method A value of 500 µg/L. As a result, the Method A default potable groundwater cleanup level of 500 µg/L is selected as the target groundwater concentration to develop a TPH concentration in soil that is protective of potable groundwater.* | | | |

**Notes:**

**(1) Known or suspected carcinogenic chemicals** that contribute to unacceptable cancer risk within the petroleum mixture are evaluated separately and must meet compliance with soil cleanup standards both on an individual basis and and when accounting for cumulative risk from multiple chemicals and pathways at the site. *See Worksheets: A2.1B and A3.1B (Soil Direct Contact); B2.1B (Potable Water Ingestion).*

**(2) Warning: Check Residual Saturation (WAC 340-747(10))**

**Terrestrial Ecological Pathway:** Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (*see* WAC 173-340-7490 through ~7494).

**A4 Soil Cleanup Levels: Summary of Results. Refer to WAC 173-340-720, 740, 745, 747**

**Date:** 04/16/24
**Site Name:** Kosmos
**Sample Name:** TP-43-S4
**Measured Soil TPH Concentration, mg/kg:** 2,308.95

## Summary of Calculation Results

| Exposure Pathway | Method/Goal | Protective TPH Conc (mg/kg) | With Measured Soil Conc | |
|---|---|---|---|---|
| | | | HI or Risk | Pass or Fail |
| *Soil Direct Contact* Protection of Soil Incidental Ingestion and Dermal Contact: Human Health | **Method B: Unrestricted Land Use** | | | |
| | TPH Soil Cleanup Level (@ HI =1) | 3,800 | 6.0E-01 | Pass |
| | Cancer Risk (1) | | 1.1E-06 | **Fail** |
| | **Method C: Industrial Land Use** | | | |
| | TPH Soil Cleanup Level (@ HI = 1) | 67,000 | 3.4E-02 | Pass |
| | Cancer Risk (1) | | 5.1E-08 | Pass |
| *Soil Leaching* Protection of Groundwater Quality | **Soil Concentration Protective of Target TPH Groundwater Concentration** | | | |
| | *Protective TPH Soil Concentration, mg/kg =* | 550 | --- | **Fail** |
| | *Target TPH Groundwater Concentration (µg/L)* | | | |
| | 500 Method A Potable Groundwater | | | |
| Remark: | *Concentrations of "weathered" deisel range organics provided in the Ecology Memorandium No. 23 that are protective for Freshwater are higher than the more restrictive default Method A value of 500 µg/L. As a result, the Method A default potable groundwater cleanup level of 500 µg/L is selected as the target groundwater concentration to develop a TPH concentration in soil that is protective of potable groundwater.* | | | |

**Notes:**

**(1) Known or suspected carcinogenic chemicals** that contribute to unacceptable cancer risk within the petroleum mixture are evaluated separately and must meet compliance with soil cleanup standards both on an individual basis and and when accounting for cumulative risk from multiple chemicals and pathways at the site. *See Worksheets: A2.1B and A3.1B (Soil Direct Contact); B2.1B (Potable Water Ingestion).*

**(2) Warning: Check Residual Saturation (WAC 340-747(10))**

**Terrestrial Ecological Pathway:** Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (*see* WAC 173-340-7490 through ~7494).

**A4 Soil Cleanup Levels: Summary of Results. Refer to WAC 173-340-720, 740, 745, 747**

**Date:** 04/16/24
**Site Name:** Kosmos
**Sample Name:** TP-49-S2
**Measured Soil TPH Concentration, mg/kg:** 1,591.93

## Summary of Calculation Results

| Exposure Pathway | Method/Goal | Protective TPH Conc (mg/kg) | With Measured Soil Conc | |
|---|---|---|---|---|
| | | | HI or Risk | Pass or Fail |
| *Soil Direct Contact* Protection of Soil Incidental Ingestion and Dermal Contact: Human Health | **Method B: Unrestricted Land Use** | | | |
| | TPH Soil Cleanup Level (@ HI =1) | 2,200 | 7.1E-01 | Pass |
| | Cancer Risk (1) | | 2.5E-08 | Pass |
| | **Method C: Industrial Land Use** | | | |
| | TPH Soil Cleanup Level (@ HI = 1) | 43,000 | 3.7E-02 | Pass |
| | Cancer Risk (1) | | 4.0E-09 | Pass |
| *Soil Leaching* Protection of Groundwater Quality | **Soil Concentration Protective of Target TPH Groundwater Concentration** | | | |
| | *Protective TPH Soil Concentration, mg/kg =* | *Use Residual Saturation Conc* | --- | Note 2 |
| | | | *Soil Leaching is not a critical pathway.* | |
| | 100% NAPL TPH concentration (mg/kg) is: | 80,000.0 | | |
| | *Target TPH Groundwater Concentration (µg/L)* | | | |
| | 800 Method A Potable Groundwater | | | |
| Remark: | *Concentrations of "weathered" deisel range organics provided in the Ecology Memorandium No. 23 that are protective for Freshwater are higher than the more restrictive default Method A value of 500 µg/L. As a result, the Method A default potable groundwater cleanup level of 500 µg/L is selected as the target groundwater concentration to develop a TPH concentration in soil that is protective of potable groundwater. Fraction Organic Carbon values derived from REMChlor-MD Toolkit User's Manual.* | | | |

**Notes:**

**(1) Known or suspected carcinogenic chemicals** that contribute to unacceptable cancer risk within the petroleum mixture are evaluated separately and must meet compliance with soil cleanup standards both on an individual basis and and when accounting for cumulative risk from multiple chemicals and pathways at the site. *See Worksheets: A2.1B and A3.1B (Soil Direct Contact); B2.1B (Potable Water Ingestion).*

**(2) Warning: Check Residual Saturation (WAC 340-747(10))**

**Terrestrial Ecological Pathway:** Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (*see* WAC 173-340-7490 through ~7494).

**A4 Soil Cleanup Levels: Summary of Results. Refer to WAC 173-340-720, 740, 745, 747**

**Date:** 04/16/24
**Site Name:** Kosmos
**Sample Name:** TP-49-S4
**Measured Soil TPH Concentration, mg/kg:** 2,868.19

## Summary of Calculation Results

| Exposure Pathway | Method/Goal | Protective TPH Conc (mg/kg) | With Measured Soil Conc | |
|---|---|---|---|---|
| | | | HI or Risk | Pass or Fail |
| *Soil Direct Contact* Protection of Soil Incidental Ingestion and Dermal Contact: Human Health | **Method B: Unrestricted Land Use** | | | |
| | TPH Soil Cleanup Level (@ HI =1) | 1,500 | 1.9E+00 | **Fail** |
| | Cancer Risk (1) | | 3.4E-08 | Pass |
| | **Method C: Industrial Land Use** | | | |
| | TPH Soil Cleanup Level (@ HI = 1) | 30,000 | 9.7E-02 | Pass |
| | Cancer Risk (1) | | 6.1E-09 | Pass |
| *Soil Leaching* Protection of Groundwater Quality | **Soil Concentration Protective of Target TPH Groundwater Concentration** | | | |
| | *Protective TPH Soil Concentration, mg/kg =* | 18 | --- | **Fail** |
| | *Target TPH Groundwater Concentration (µg/L)* | | | |
| | 800 Method A Potable Groundwater | | | |
| Remark: | *Concentrations of "weathered" deisel range organics provided in the Ecology Memorandium No. 23 that are protective for Freshwater are higher than the more restrictive default Method A value of 500 µg/L. As a result, the Method A default potable groundwater cleanup level of 500 µg/L is selected as the target groundwater concentration to develop a TPH concentration in soil that is protective of potable groundwater. Fraction Organic Carbon values derived from REMChlor-MD Toolkit User's Manual.* | | | |

**Notes:**

**(1) Known or suspected carcinogenic chemicals** that contribute to unacceptable cancer risk within the petroleum mixture are evaluated separately and must meet compliance with soil cleanup standards both on an individual basis and and when accounting for cumulative risk from multiple chemicals and pathways at the site. *See Worksheets: A2.1B and A3.1B (Soil Direct Contact); B2.1B (Potable Water Ingestion).*

**(2) Warning: Check Residual Saturation (WAC 340-747(10))**

**Terrestrial Ecological Pathway:** Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (*see* WAC 173-340-7490 through ~7494).

# APPENDIX H
# Terrestrial Ecological Evaluation

# APPENDIX H

# Terrestrial Ecological Evaluation

The terrestrial ecological evaluation (TEE) process is required at all Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) sites where there has been a release or threatened release of a hazardous substance that may pose a threat to human health or the environment. The purpose of the TEE is to systematically organize and evaluate data, assumptions, and uncertainties to help understand and characterize potential risks to terrestrial biota that may be exposed to site-related constituents in a manner that supports decision-making. Haley & Aldrich, Inc. (Haley & Aldrich) completed an area of interest-specific TEEs for the former Kosmos mill (Site) and were conducted in general accordance with the methodologies and values provided in MTCA.

The Site does not qualify for a TEE exclusion based on Washington Administrative Code (WAC) 173-340-7491 and a full site-specific TEE is required.

## TEE Approach

An initial step in the TEE process is to determine whether a site qualifies for a TEE exclusion. If a site meets at least one of the four exclusionary criteria described in WAC 173-340-7491, then no further evaluation of ecological risk is necessary. The four exclusionary criteria are:

1. *Exclusion 1: Contamination below the point of compliance*. This means all soil contamination shall be below the standard point of compliance of 15 feet below ground surface (bgs), or below the conditional point of compliance of 6 feet bgs. The conditional point of compliance may only be used in conjunction with institutional controls which would prevent excavation of deeper soils.
2. *Exclusion 2: Incomplete exposure pathway*. The primary pathway to soil for ecological receptors would be direct contact and ingestion. The pathway could be considered incomplete if there were barriers for plants or animals to contact soils (e.g., pavement, buildings, or protective cap).
3. *Exclusion 3: Type of contamination and proximity to ecological receptors*. For sites contaminated with hazardous substances other than those specified in WAC 173-340-7491, there must be less than 1.5 acres of contiguous undeveloped land on the site or within 500 feet of any area located on the site.
4. *Exclusion 4: Concentrations below background levels*. For certain naturally occurring contaminants, or for contaminated sites found in urban areas, there may be contamination that is not directly attributable to the site.

### EVALUATION OF EXCLUSIONS

1. Exclusion 1 does not apply to the Site. Total petroleum hydrocarbons (TPH) and other constituents were detected between 0 and 15 feet bgs.
2. Exclusion 2 does not apply to the Site. While there are some former foundations, concrete slabs associated with the former lumber mill, and the newer protective cap, the physical barriers are discontinuous. Large areas of undeveloped lands are located at the Site.

3. Exclusion 3 does not apply to the Site. There is undeveloped land within 500 feet of the Site and the undeveloped land is greater than 1.5 acres.
4. Exclusion 4 does not apply to the Site. Some of the contaminants found in soils at the Site are not naturally occurring and are unlikely to be present from other sources.

The Site evaluated under this remedial investigation (RI) Report does not qualify for the exclusions under WAC 173-340. Once it has been established that none of the exclusionary criteria apply, either a Simplified or site-specific TEE is required. Chapter 173-340-7492 of the MTCA specifically refers to the process of determining the type of evaluation that is required (simplified or site-specific) as "Applicability of a Simplified Terrestrial Ecological Evaluation."

### APPLICABILITY OF A SIMPLIFIED TEE

WAC 173-340-7492 lists out criteria that are to be used to determine whether a simplified TEE can be used. If any of the below criteria apply, then a site-specific TEE is necessary. Those criteria are as follows:

1. *Natural area.* The site is located on, or directly adjacent to, an area where management or land use plans will maintain or restore native or semi-native vegetation.
2. *Vulnerable species.* The site is used by a threated or endangered species; a wildlife species classified by the Washington Department of Fish and Wildlife (WDFW) as a "priority species" or "species of concern" under Title 77 Revised Code of Washington (RCW); or a plant species classified by the Washington State Department of Natural Resources natural heritage program as "endangered," "threatened," or "sensitive" under Title 79 RCW. For plants, "used" means that a plant species grows at the site or has been found growing at the site. For animals, "used" means that individuals of a species have been observed to live, feed, or breed at the site.
3. *Extensive habitat.* The site is located on a property that contains at least ten acres of native vegetation within 500 feet of the site, not including vegetation beyond the property boundaries.
4. *Risk to significant wildlife populations.* The department determines that the site may present a risk to significant wildlife populations.

A simplified TEE is not appropriate for the Site since the Site is vegetated and there is an identified species of concern for the uplands. Trees and understory vegetation are likely comprised of plants native to Washington state. Haley & Aldrich is not aware of any planned changes for future uses of the Kosmos Flats Area. Given that the Site is in a natural area that provides extensive habitat, a site-specific TEE is required.

## Site-Specific TEE

The site-specific TEE process is designed to assess ecological risk at any site and to provide the basis for a cleanup level protective of terrestrial ecological receptors at the site, including sites with protected status species. Under WAC 173-340-7493, a site-specific TEE shall include the following steps:

- Problem formulation;
- Selection of appropriate evaluation method(s);
- Conducting the evaluation; and
- Establish ecologically protective soil concentration.

## PROBLEM FORMULATION

### Chemicals of Ecological Concern

Historical investigations and investigations conducted by Haley & Aldrich indicate the presence of TPH in the gasoline, diesel, and oil ranges (TPH-G, TPH-D, and TPH-O, respectively) and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in soil and/or shallow groundwater above MTCA Method A cleanup levels (CULs). The highest concentrations of contaminants of concern (COCs) in soil and groundwater are located in the upper 10 to 15 feet of soil in the upland area of the Site. Additionally, TPH-D, TPH-O, and cPAHs were found in soil above CULs at the toe of the bank (sample Creekbed 1) and on the creek bank underneath the protective cap (sample LB-2).

As described in the RI Report, constituents were not detected in surface water at concentrations above Tacoma Power's Water Quality Protection Plan's (WQPP) indicator levels, and constituents were not detected in sediment at concentrations above Sediment Cleanup Objectives (SCOs) for freshwater sediment.

The contaminants of ecological concern (CEC) were determined by comparing soil analytical data for the Site that is representative of current conditions (i.e., excludes data for soil that was removed from the Site) to ecological screening levels (SLs) presented in Table 749-3 of the MTCA regulation. Table 5.1, included in the Ecology's Draft Terrestrial Ecological Evaluation guidance document (Ecology, 2017), provides SL values for plants, soil biota, and wildlife for a group of selected analytes. In accordance with WAC 173-340-7493, for constituents that do not have a value published in Table 749-3, values from the literature should be obtained. Therefore, screening levels for soil biota, plants, and wildlife were obtained from the U.S. Environmental Protection Agency (EPA) Region 4 ecological soil screening level table (EPA, 2018). The Region 4 values are based on EPA Ecological Soil Screening Levels (EcoSSLs) and Department of Energy Laboratories (Los Alamos National Laboratory and Oak Ridge National Laboratory). MTCA specifically identifies the Oak Ridge National Laboratory values as values to be considered in the identification of screening levels.

Table H-1 presents the analytical data for soil from 0 to 15 feet bgs and identifies individual concentrations that exceed the lowest screening level. Table H-2 provides a comparison of maximum detected concentrations of constituents in soil 0 to 15 feet bgs to the screening levels. Constituents detected at maximum concentrations above the SLs are retained as CECs. The full soil data set is reported in Table 4 of the RI Report and Tables 2 through 4 of Haley & Aldrich's Data Summary Report (Haley & Aldrich, 2021).

As indicated in Table H-2, CECs include ten volatile organic compounds (VOCs), three polycyclic aromatic hydrocarbons (PAHs), TPH-G, TPH-D, and eight metals. Naphthalene was detected in more samples and at a higher concentration in analysis as a semi-VOC (sVOC) than in analysis as a VOC and was, therefore, not retained as a VOC CEC. Methylene chloride was not retained as a CEC because its presence is most likely due to laboratory contamination and is not associated with the petroleum release at the Site.

### Exposure Pathways

Complete and significant exposure pathways warranting assessment in this TEE are identified below:

- Terrestrial plants: direct contact with and uptake of soil CECs;
- Terrestrial soil-swelling invertebrates: direct contact with and ingestion of soil CECs;

- Small and large mammals: incidental ingestion of soil and food chain uptake of soil COCs;
- Birds: incidental ingestion of soil and food chain uptake of soil COCs;

Groundwater has been characterized at the Site. Based on data collected during the remedial investigation, the TPH contamination in groundwater is limited to the upland area and does not extend to Rainey Creek, as COCs were not detected above the WQPP indicator levels in any of the surface water samples analyzed.

There are no complete exposure pathways to surface water and sediment because constituents were detected below the WQPP's indicator levels and freshwater SCOs.

### Terrestrial Ecological Receptors of Concern

The Site is currently vacant, but accessible by the public as a recreational wildlife area. The current Site uses are expected to continue into the foreseeable future. The Site supports vegetation including grasses, shrubs, and trees, and is located adjacent to Rainey Creek. The Site, therefore, provides habitat for plants and soil dwelling invertebrates, as well as foraging habitat for birds and mammals.

#### *Rare, Threatened, or Endangered Species*

The WDFW publishes a Priority Habitats and Species (PHS) list. The PHS list is a catalog of habitats and species considered to be priorities for conservation and management. Priority species require protective measures for their survival because of their population status; sensitivity to habitat alteration; and recreational, commercial, or tribal importance. Priority species include State Endangered, Threatened, Sensitive, and Candidate species; animal aggregations (e.g., bat colonies) considered vulnerable; and species of recreational, commercial, or tribal importance that are vulnerable. Priority habitats are habitat types or elements with unique or significant value to a diverse assemblage of species. WDFW's online database was also reviewed for PHS information. According to the online database, the Site is mapped as habitat for one priority species, the northern spotted owl (*Strix occidentalis)*. The Site does not contain a priority habitat.

### Toxicological Assessment

The toxicological assessment identifies the significant adverse effects in the receptors of concern that may result from exposure to CECs. The identification of adverse effects is conducted through identification of assessment endpoints (AEs) and measurement endpoints (MEs). Endpoints are used in the TEE to define the ecological attributes to be protected (AEs) and to define measurable effects (MEs) of those attributes that can be used to gauge the degree of impact that may occur.

A typical AE is an ecological attribute that, if found to be significantly affected, would indicate a need for remediation. AEs most often relate to attributes of biological populations or communities (e.g., abundance, richness, and productivity). Individual-based AEs typically are relevant only if endangered species are present. The primary AE identified for this TEE is the protection and maintenance of growth, development, reproduction, and survival of future populations of the representative receptors at the Site. The following are appropriate AEs for the Site.

- Assessment Endpoint # 1: Protection of the plant communities from changes in structure and function due to exposure to CECs. *Are levels of CECs sufficient to cause survival, growth, or reproductive impairment to plant communities?*

- Assessment Endpoint # 2: Maintenance of the soil invertebrate communities using Site-related resourses. *Are levels of CECs sufficient to cause survival, growth, or reproductive impairment to invertebrate communities?*
- Assessment Endpoint # 3: Maintenance of terrestrial herbivorous wildlife populations using Site-related resources. *Are levels of CECs sufficient to cause survival, growth, or reproductive impairment in populations of terrestrial herbivorous wildlife?*
- Assessment Endpoint # 4: Maintenance of terrestrial omnivorous wildlife populations using Site-related resources. *Are levels of CECs sufficient to cause survival, growth, or reproductive impairment in populations of terrestrial omnivorous wildlife?*
- Assessment Endpoint # 5: Maintenance of terrestrial invertivorous wildlife populations using Site-related resources. *Are levels of CECs sufficient to cause survival, growth, or reproductive impairment in populations of terrestrial invertivorous wildlife?*
- Assessment Endpoint # 6: Maintenance of terrestrial carnivorous wildlife populations using Site-related resources. *Are levels of CECs sufficient to cause survival, growth, or reproductive impairment in populations of terrestrial carnivorous wildlife?*

MEs are chosen to link the existing Site conditions to the goals established by the AEs. The MEs are quantitative expressions of observed or measured biological responses to contamination relevant to the selected AEs. The valued ecological characteristics of MEs can be represented by, or the biological effects can be measured by, endpoints such as mortality, reproduction, or growth (EPA, 1997).

Therefore, the risk question identified above for each AE is assessed using MEs. The general type of ME used in the assessment was the comparison of estimated or measured exposure levels of chemicals of potential ecological concern with levels that may potentially cause adverse effects.

The ME used for all AEs in this TEE is comparison of the estimated exposure with plant, soil biota, and wildlife screening levels.

## SELECTION OF APPROPRIATE TERRESTRIAL ECOLOGICAL EVALUATION METHODS

As indicated in WAC 173-340-7493, the soil concentrations listed in MTCA Table 749-3 and Ecology TEE Guidance Table 5.1 (Ecology, 2017) may be used as cleanup levels in lieu of using literature surveys, bioassays, wildlife exposure models, biomarkers, or field studies. Consequently, the soil concentrations provided in Table 749-3 are used as MEs. Soil concentrations that are greater than the ME are inferred to pose a potential risk to terrestrial receptors. The MEs are then adopted as preliminary soil cleanup levels for evaluation in the feasibility study.

In accordance with the MTCA regulation, statistical methods may be used for evaluating CEC compliance with the cleanup levels. Comparison of analytical data for the CECs to the Table 749-3 values is conducted using the 95-percent upper confidence limit (UCL) on the true mean, in accordance with the following guidelines specified in MTCA.

- The data set cannot contain any concentrations that are more than two-times the cleanup level.
- No more than 10 percent of the detected concentrations in the data set can exceed the cleanup level.
- Data that is not demonstrated to be normally distributed should be assumed to be lognormally distributed, and the UCL for lognormally distributed data should be based on Land's H-Statistic.

When the 95 percent UCL does not exceed the lowest applicable cleanup level in accordance with these guidelines, the CEC is concluded to be in compliance with the cleanup level. 95 percent UCLs were calculated using EPA ProUCL version 2.0 software (EPA, 2022).

For each CEC, scenarios were evaluated using the 0 to 15 feet bgs and 0 to 6 feet bgs points of compliance to identify concentrations that would need to be removed from the soil data set to enable the 95 percent UCL to comply with the lowest cleanup levels. Table H-3 provides a summary of the evaluation. ProUCL input files and output sheets are provided at the end of this appendix. The results of the evaluation are summarized as follows:

- Arsenic, chromium, mercury, nickel, benzene, and anthracene: The UCLs for soil 0 to 15 feet bgs comply with the criteria for using the UCL to demonstrate compliance. No samples require removal to address these CECs.
- TPH-G: Removal of all samples with concentrations greater than two-times the lowest screening level (2 x 100 milligrams per kilogram [mg/kg] = 200 mg/kg) in the exposure point selected (soil 0 to 15 feet bgs, soil 0 to 10 feet bgs, or soil 0 to 6 feet bgs) enables the UCL comply with the criteria for using the UCL to demonstrate compliance.
- TPH-D: Removal of all samples with concentrations greater than two-times the lowest screening level (2 x 200 mg/kg = 400 mg/kg) in the exposure point selected (soil 0 to 15 feet bgs, soil 0 to 10 feet bgs, or soil 0 to 6 feet bgs) enables the UCL comply with the criteria for using the UCL to demonstrate compliance.
- Barium, lead, zinc: Removal of isolated samples, generally from the top 3 feet of ground surface, enables the UCL comply with the criteria for using the UCL to demonstrate compliance.
- Copper: Copper was detected in approximately half of the samples at concentrations above Ecology's (Ecology, 1994) and the Site-specific natural background level of 52.85 and 52.03 mg/kg, respectively, but in only two samples at concentrations more than 104 mg/kg (one in shallow soil and one soil deeper than 6 feet bgs). However, copper is not considered a Site COC since copper is not associated with the petroleum release and has not been previously used in historical operations.
- Ethylbenzene and m,p-xylenes: Removal of the sample associated with TP-49 enables the UCL comply with the criteria for using the UCL to demonstrate compliance.
- Naphthalene, 2-methylnaphthalene, and o-xylene: Removal of all samples with concentrations two-times the lowest screening levels in the exposure point selected (soil 0 to 15 feet bgs, soil 0 to 10 feet bgs, or soil 0 to 6 feet bgs) enables the UCL comply with the criteria for using the UCL to demonstrate compliance.
- 1,2,4-Trimethylbenzene, 1,3,5-trimethylbenzene, acetone, cymene, hexane, and isopropylbenzene: Due to analytical detection limits that are generally equal to or higher than the screening levels, the majority of samples with detections of these constituents require removal to enable the UCLs to comply with the criteria for using the UCL to demonstrate compliance. However, these CECs were detected at low frequency (generally one to seven out of 107 samples) and low concentrations. Despite having low screening levels for soil biota, these constituents are not considered to be significant ecological risk drivers. Moreover, these constituents will biodegrade over time.

## Summary and Conclusions

Based on the TEE process in WAC 173-340-7490 and WSDOE guidance (Ecology, 2017) the Site does not qualify for an exemption or a simplified TEE. Therefore, a site-specific TEE was performed. The TEE evaluated potential risks to plants, soil biota, and terrestrial wildlife by comparing maximum detected concentrations of constituents in soil to screening levels provided in MTCA Table 749-3 and values obtained from other sources as recommended by WAC 173-340-7490. Constituents with maximum detected concentrations that exceeded the screening levels were retained as CECs. The screening levels used in the selection of CEC were retained as cleanup levels. Compliance with cleanup levels was evaluated using the criteria for applying the 95 percent UCL values in accordance with Ecology (2017) for points of compliance that included 0 to 6 feet bgs, 0 to 10 feet bgs, and 0 to 15 feet bgs.

The results of the TEE indicate that:

- TPH-G and TPH-D require the largest number of samples to be mitigated to enable the UCL to comply with the criteria for using the UCL to demonstrate compliance.
- 1,2,4-Trimethylbenzene, 1,3,5-trimethylbenzene, acetone, cymene, hexane, and isopropylbenzene, ethylbenzene, xylene detections are co-located with TPH-G detections that require mitigation. Therefore, mitigating TPH-G will also address the compliance for these CECs.
- Barium, lead, zinc, 2-methylnaphthalene, and naphthalene require mitigation of isolated samples to enable the UCL to comply with the criteria for using the UCL to demonstrate compliance.
- Arsenic, chromium, mercury, nickel, benzene, and anthracene comply with the criteria for using the UCL to demonstrate compliance without mitigation of any samples.

The Feasibility Study (FS) will use the results of the TEE to evaluate various options for mitigating potential ecological risks.

## References


1. Ecology, 1994. Natural Background Soil Metals Concentrations in Washington State. Publication 94-115. October.

2. Ecology, 2017. Draft Technical Document: Terrestrial Ecological Evaluations under the Model Toxics Control Act. Publication 19-09-051. February.

3. Haley & Aldrich, Inc., 2021. Data Summary Report, Kosmos Mill Oil Cleanup, Kosmos Flats Area. Prepared for Tacoma Public Utilities. February 19, 2021.

4. U.S. Environmental Protection Agency (EPA), 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. EPA 540-R-97-006. June.

5. EPA, 2018. Region 4 Ecological Risk Assessment Supplemental Guidance.

6. EPA, 2022. ProUCL: Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. Version 5.2.

## UCL Statistics for Data Sets with Non-Detects

## Kosmos - TPH-G

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.2 9/28/2023 5:45:40 PM |
| From File | GRO_ProUCLInput.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**TPH-G**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 158 | Number of Distinct Observations | 39 |
| Number of Detects | 43 | Number of Non-Detects | 115 |
| Number of Distinct Detects | 37 | Number of Distinct Non-Detects | 2 |
| Minimum Detect | 7.8 | Minimum Non-Detect | 5 |
| Maximum Detect | 3800 | Maximum Non-Detect | 25 |
| Variance Detects | 606724 | Percent Non-Detects | 72.78% |
| Mean Detects | 402.2 | SD Detects | 778.9 |
| Median Detects | 82 | CV Detects | 1.937 |
| Skewness Detects | 2.945 | Kurtosis Detects | 9.351 |
| Mean of Logged Detects | 4.474 | SD of Logged Detects | 1.822 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.57 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.923 | Detected Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.306 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.156 | Detected Data Not Normal at 1% Significance Level |

**Detected Data Not Normal at 1% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 113.1 | KM Standard Error of Mean | 35.32 |
| 90KM SD | 438.8 | 95% KM (BCA) UCL | 174.9 |
| 95% KM (t) UCL | 171.5 | 95% KM (Percentile Bootstrap) UCL | 176.1 |
| 95% KM (z) UCL | 171.2 | 95% KM Bootstrap t UCL | 209.7 |
| 90% KM Chebyshev UCL | 219.1 | 95% KM Chebyshev UCL | 267.1 |
| 97.5% KM Chebyshev UCL | 333.7 | 99% KM Chebyshev UCL | 464.5 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 2.018 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.83 | Detected Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.197 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.144 | Detected Data Not Gamma Distributed at 5% Significance Level |

**Detected Data Not Gamma Distributed at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.428 | k star (bias corrected MLE) | 0.413 |
| Theta hat (MLE) | 940.7 | Theta star (bias corrected MLE) | 973.3 |

| | | | |
|---|---|---|---|
| nu hat (MLE) | 36.77 | nu star (bias corrected) | 35.54 |
| Mean (detects) | 402.2 | | |

**Gamma ROS Statistics using Imputed Non-Detects**

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

| | | | |
|---|---|---|---|
| Minimum | 0.01 | Mean | 109.5 |
| Maximum | 3800 | Median | 0.01 |
| SD | 441.1 | CV | 4.029 |
| k hat (MLE) | 0.117 | k star (bias corrected MLE) | 0.119 |
| Theta hat (MLE) | 939.1 | Theta star (bias corrected MLE) | 923.2 |
| nu hat (MLE) | 36.83 | nu star (bias corrected) | 37.47 |
| Adjusted Level of Significance (β) | 0.0485 | | |
| Approximate Chi Square Value (37.47, α) | 24.45 | Adjusted Chi Square Value (37.47, β) | 24.36 |
| 95% Gamma Approximate UCL | 167.7 | 95% Gamma Adjusted UCL | 168.4 |

**Estimates of Gamma Parameters using KM Estimates**

| | | | |
|---|---|---|---|
| Mean (KM) | 113.1 | SD (KM) | 438.8 |
| Variance (KM) | 192531 | SE of Mean (KM) | 35.32 |
| k hat (KM) | 0.0664 | k star (KM) | 0.0694 |
| nu hat (KM) | 21 | nu star (KM) | 21.93 |
| theta hat (KM) | 1702 | theta star (KM) | 1630 |
| 80% gamma percentile (KM) | 39.7 | 90% gamma percentile (KM) | 242.4 |
| 95% gamma percentile (KM) | 649.9 | 99% gamma percentile (KM) | 2140 |

**Gamma Kaplan-Meier (KM) Statistics**

| | | | |
|---|---|---|---|
| Approximate Chi Square Value (21.93, α) | 12.29 | Adjusted Chi Square Value (21.93, β) | 12.22 |
| 95% KM Approximate Gamma UCL | 201.9 | 95% KM Adjusted Gamma UCL | 203 |

**Lognormal GOF Test on Detected Observations Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.929 | **Shapiro Wilk GOF Test** |
| 10% Shapiro Wilk Critical Value | 0.951 | Detected Data Not Lognormal at 10% Significance Level |
| Lilliefors Test Statistic | 0.104 | **Lilliefors GOF Test** |
| 10% Lilliefors Critical Value | 0.123 | Detected Data appear Lognormal at 10% Significance Level |

Detected Data appear Approximate Lognormal at 10% Significance Level

**Lognormal ROS Statistics Using Imputed Non-Detects**

| | | | |
|---|---|---|---|
| Mean in Original Scale | 110.3 | Mean in Log Scale | -0.125 |
| SD in Original Scale | 440.9 | SD in Log Scale | 3.739 |
| 95% t UCL (assumes normality of ROS data) | 168.3 | 95% Percentile Bootstrap UCL | 171.9 |
| 95% BCA Bootstrap UCL | 187.4 | 95% Bootstrap t UCL | 201.6 |
| 95% H-UCL (Log ROS) | 5058 | | |

**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| KM Mean (logged) | 2.39 | KM Geo Mean | 10.91 |

| | | | |
|---|---|---|---|
| KM SD (logged) | 1.584 | 95% Critical H Value (KM-Log) | 2.815 |
| KM Standard Error of Mean (logged) | 0.127 | 95% H-UCL (KM -Log) | 54.57 |
| KM SD (logged) | 1.584 | 95% Critical H Value (KM-Log) | 2.815 |
| KM Standard Error of Mean (logged) | 0.127 | | |

Note: KM UCLs may be biased low with this dataset. Other substitution method recommended

**DL/2 Statistics**

| DL/2 Normal | | DL/2 Log-Transformed | |
|---|---|---|---|
| Mean in Original Scale | 111.3 | Mean in Log Scale | 1.895 |
| SD in Original Scale | 440.6 | SD in Log Scale | 1.846 |
| 95% t UCL (Assumes normality) | 169.3 | 95% H-Stat UCL | 57.9 |

DL/2 is not a recommended method, provided for comparisons and historical reasons

**Nonparametric Distribution Free UCL Statistics**

Detected Data appear Approximate Lognormal Distributed at 10% Significance Level

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| KM H-UCL | 54.57 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

GRO_1

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 144 | Number of Distinct Observations | 27 |
| | | Number of Missing Observations | 14 |
| Number of Detects | 29 | Number of Non-Detects | 115 |
| Number of Distinct Detects | 25 | Number of Distinct Non-Detects | 2 |
| Minimum Detect | 7.8 | Minimum Non-Detect | 5 |
| Maximum Detect | 160 | Maximum Non-Detect | 25 |
| Variance Detects | 1960 | Percent Non-Detects | 79.86% |
| Mean Detects | 48.08 | SD Detects | 44.27 |
| Median Detects | 35 | CV Detects | 0.921 |
| Skewness Detects | 1.074 | Kurtosis Detects | 0.252 |
| Mean of Logged Detects | 3.413 | SD of Logged Detects | 1.017 |

**Normal GOF Test on Detects Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.839 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.898 | Detected Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.181 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.189 | Detected Data appear Normal at 1% Significance Level |

| Detected Data appear Approximate Normal at 1% Significance Level | | | |
|---|---|---|---|
| | | | |
| **Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs** | | | |
| KM Mean | 13.68 | KM Standard Error of Mean | 2.211 |
| 90KM SD | 26.07 | 95% KM (BCA) UCL | 17.67 |
| 95% KM (t) UCL | 17.34 | 95% KM (Percentile Bootstrap) UCL | 17.43 |
| 95% KM (z) UCL | 17.32 | 95% KM Bootstrap t UCL | 18.33 |
| 90% KM Chebyshev UCL | 20.31 | 95% KM Chebyshev UCL | 23.32 |
| 97.5% KM Chebyshev UCL | 27.49 | 99% KM Chebyshev UCL | 35.68 |
| | | | |
| **Gamma GOF Tests on Detected Observations Only** | | | |
| A-D Test Statistic | 0.987 | **Anderson-Darling GOF Test** | |
| 5% A-D Critical Value | 0.769 | Detected Data Not Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.174 | **Kolmogorov-Smirnov GOF** | |
| 5% K-S Critical Value | 0.167 | Detected Data Not Gamma Distributed at 5% Significance Level | |
| Detected Data Not Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics on Detected Data Only** | | | |
| k hat (MLE) | 1.227 | k star (bias corrected MLE) | 1.123 |
| Theta hat (MLE) | 39.2 | Theta star (bias corrected MLE) | 42.83 |
| nu hat (MLE) | 71.14 | nu star (bias corrected) | 65.11 |
| Mean (detects) | 48.08 | | |
| | | | |
| **Gamma ROS Statistics using Imputed Non-Detects** | | | |
| GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | |
| GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | |
| For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | |
| This is especially true when the sample size is small. | | | |
| For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | |
| Minimum | 0.01 | Mean | 9.691 |
| Maximum | 160 | Median | 0.01 |
| SD | 27.53 | CV | 2.841 |
| k hat (MLE) | 0.147 | k star (bias corrected MLE) | 0.148 |
| Theta hat (MLE) | 66.12 | Theta star (bias corrected MLE) | 65.42 |
| nu hat (MLE) | 42.21 | nu star (bias corrected) | 42.66 |
| Adjusted Level of Significance (β) | 0.0483 | | |
| Approximate Chi Square Value (42.66, α) | 28.69 | Adjusted Chi Square Value (42.66, β) | 28.57 |
| 95% Gamma Approximate UCL | 14.41 | 95% Gamma Adjusted UCL | 14.47 |
| | | | |
| **Estimates of Gamma Parameters using KM Estimates** | | | |
| Mean (KM) | 13.68 | SD (KM) | 26.07 |
| Variance (KM) | 679.6 | SE of Mean (KM) | 2.211 |
| k hat (KM) | 0.275 | k star (KM) | 0.274 |
| nu hat (KM) | 79.31 | nu star (KM) | 79 |
| theta hat (KM) | 49.67 | theta star (KM) | 49.87 |
| 80% gamma percentile (KM) | 20.48 | 90% gamma percentile (KM) | 40.74 |
| 95% gamma percentile (KM) | 64.38 | 99% gamma percentile (KM) | 126.5 |

| Gamma Kaplan-Meier (KM) Statistics | | | |
|---|---|---|---|
| Approximate Chi Square Value (79.00, α) | 59.52 | Adjusted Chi Square Value (79.00, β) | 59.35 |
| 95% KM Approximate Gamma UCL | 18.16 | 95% KM Adjusted Gamma UCL | 18.21 |

| Lognormal GOF Test on Detected Observations Only | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.899 | **Shapiro Wilk GOF Test** |
| 10% Shapiro Wilk Critical Value | 0.937 | Detected Data Not Lognormal at 10% Significance Level |
| Lilliefors Test Statistic | 0.164 | **Lilliefors GOF Test** |
| 10% Lilliefors Critical Value | 0.148 | Detected Data Not Lognormal at 10% Significance Level |
| Detected Data Not Lognormal at 10% Significance Level | | |

| Lognormal ROS Statistics Using Imputed Non-Detects | | | |
|---|---|---|---|
| Mean in Original Scale | 11 | Mean in Log Scale | 0.308 |
| SD in Original Scale | 27.13 | SD in Log Scale | 2.207 |
| 95% t UCL (assumes normality of ROS data) | 14.74 | 95% Percentile Bootstrap UCL | 14.87 |
| 95% BCA Bootstrap UCL | 15.41 | 95% Bootstrap t UCL | 15.56 |
| 95% H-UCL (Log ROS) | 29.88 | | |

| Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution | | | |
|---|---|---|---|
| KM Mean (logged) | 1.973 | KM Geo Mean | 7.193 |
| KM SD (logged) | 0.851 | 95% Critical H Value (KM-Log) | 2.072 |
| KM Standard Error of Mean (logged) | 0.0722 | 95% H-UCL (KM -Log) | 11.97 |
| KM SD (logged) | 0.851 | 95% Critical H Value (KM-Log) | 2.072 |
| KM Standard Error of Mean (logged) | 0.0722 | | |

| DL/2 Statistics | | | |
|---|---|---|---|
| **DL/2 Normal** | | **DL/2 Log-Transformed** | |
| Mean in Original Scale | 11.75 | Mean in Log Scale | 1.43 |
| SD in Original Scale | 26.83 | SD in Log Scale | 1.104 |
| 95% t UCL (Assumes normality) | 15.45 | 95% H-Stat UCL | 9.503 |
| DL/2 is not a recommended method, provided for comparisons and historical reasons | | | |

| Nonparametric Distribution Free UCL Statistics | | | |
|---|---|---|---|
| Detected Data appear Approximate Normal Distributed at 1% Significance Level | | | |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% KM (t) UCL | 17.34 | | |

When a data set follows an approximate distribution passing only one of the GOF tests,

it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

GRO_2

| General Statistics |
|---|

| | | | |
|---|---|---|---|
| Total Number of Observations | 145 | Number of Distinct Observations | 28 |
| | | Number of Missing Observations | 13 |
| Number of Detects | 30 | Number of Non-Detects | 115 |
| Number of Distinct Detects | 26 | Number of Distinct Non-Detects | 2 |
| Minimum Detect | 7.8 | Minimum Non-Detect | 5 |
| Maximum Detect | 330 | Maximum Non-Detect | 25 |
| Variance Detects | 4541 | Percent Non-Detects | 79.31% |
| Mean Detects | 57.48 | SD Detects | 67.39 |
| Median Detects | 36.5 | CV Detects | 1.172 |
| Skewness Detects | 2.547 | Kurtosis Detects | 8.522 |
| Mean of Logged Detects | 3.492 | SD of Logged Detects | 1.09 |

**Normal GOF Test on Detects Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.722 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.9 | Detected Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.231 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.185 | Detected Data Not Normal at 1% Significance Level |

Detected Data Not Normal at 1% Significance Level

**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**

| | | | |
|---|---|---|---|
| KM Mean | 15.86 | KM Standard Error of Mean | 3.115 |
| 90KM SD | 36.88 | 95% KM (BCA) UCL | 21.5 |
| 95% KM (t) UCL | 21.02 | 95% KM (Percentile Bootstrap) UCL | 21.22 |
| 95% KM (z) UCL | 20.99 | 95% KM Bootstrap t UCL | 23.47 |
| 90% KM Chebyshev UCL | 25.21 | 95% KM Chebyshev UCL | 29.44 |
| 97.5% KM Chebyshev UCL | 35.32 | 99% KM Chebyshev UCL | 46.86 |

**Gamma GOF Tests on Detected Observations Only**

| | | |
|---|---|---|
| A-D Test Statistic | 0.877 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.775 | Detected Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.163 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.165 | Detected data appear Gamma Distributed at 5% Significance Level |

Detected data follow Appr. Gamma Distribution at 5% Significance Level

**Gamma Statistics on Detected Data Only**

| | | | |
|---|---|---|---|
| k hat (MLE) | 1.029 | k star (bias corrected MLE) | 0.948 |
| Theta hat (MLE) | 55.86 | Theta star (bias corrected MLE) | 60.61 |
| nu hat (MLE) | 61.74 | nu star (bias corrected) | 56.9 |
| Mean (detects) | 57.48 | | |

**Gamma ROS Statistics using Imputed Non-Detects**

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

| | | | |
|---|---|---|---|
| Minimum | 0.01 | Mean | 11.9 |
| Maximum | 330 | Median | 0.01 |

| | | | |
|---|---|---|---|
| SD | 38.21 | CV | 3.211 |
| k hat (MLE) | 0.143 | k star (bias corrected MLE) | 0.145 |
| Theta hat (MLE) | 83.15 | Theta star (bias corrected MLE) | 82.21 |
| nu hat (MLE) | 41.51 | nu star (bias corrected) | 41.98 |
| Adjusted Level of Significance (β) | 0.0483 | | |
| Approximate Chi Square Value (41.98, α) | 28.13 | Adjusted Chi Square Value (41.98, β) | 28.02 |
| 95% Gamma Approximate UCL | 17.76 | 95% Gamma Adjusted UCL | 17.83 |

**Estimates of Gamma Parameters using KM Estimates**

| | | | |
|---|---|---|---|
| Mean (KM) | 15.86 | SD (KM) | 36.88 |
| Variance (KM) | 1360 | SE of Mean (KM) | 3.115 |
| k hat (KM) | 0.185 | k star (KM) | 0.186 |
| nu hat (KM) | 53.64 | nu star (KM) | 53.87 |
| theta hat (KM) | 85.75 | theta star (KM) | 85.4 |
| 80% gamma percentile (KM) | 20.06 | 90% gamma percentile (KM) | 47.9 |
| 95% gamma percentile (KM) | 83.27 | 99% gamma percentile (KM) | 181.9 |

**Gamma Kaplan-Meier (KM) Statistics**

| | | | |
|---|---|---|---|
| Approximate Chi Square Value (53.87, α) | 38 | Adjusted Chi Square Value (53.87, β) | 37.87 |
| 95% KM Approximate Gamma UCL | 22.48 | 95% KM Adjusted Gamma UCL | 22.56 |

**Lognormal GOF Test on Detected Observations Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.921 | **Shapiro Wilk GOF Test** |
| 10% Shapiro Wilk Critical Value | 0.939 | Detected Data Not Lognormal at 10% Significance Level |
| Lilliefors Test Statistic | 0.156 | **Lilliefors GOF Test** |
| 10% Lilliefors Critical Value | 0.146 | Detected Data Not Lognormal at 10% Significance Level |

**Detected Data Not Lognormal at 10% Significance Level**

**Lognormal ROS Statistics Using Imputed Non-Detects**

| | | | |
|---|---|---|---|
| Mean in Original Scale | 13.07 | Mean in Log Scale | 0.17 |
| SD in Original Scale | 37.89 | SD in Log Scale | 2.386 |
| 95% t UCL (assumes normality of ROS data) | 18.28 | 95% Percentile Bootstrap UCL | 18.5 |
| 95% BCA Bootstrap UCL | 19.69 | 95% Bootstrap t UCL | 20.65 |
| 95% H-UCL (Log ROS) | 43.18 | | |

**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| KM Mean (logged) | 1.999 | KM Geo Mean | 7.385 |
| KM SD (logged) | 0.905 | 95% Critical H Value (KM-Log) | 2.118 |
| KM Standard Error of Mean (logged) | 0.0765 | 95% H-UCL (KM -Log) | 13.05 |
| KM SD (logged) | 0.905 | 95% Critical H Value (KM-Log) | 2.118 |
| KM Standard Error of Mean (logged) | 0.0765 | | |

**Note: KM UCLs may be biased low with this dataset. Other substitution method recommended**

**DL/2 Statistics**

| **DL/2 Normal** | | **DL/2 Log-Transformed** | |
|---|---|---|---|
| Mean in Original Scale | 13.94 | Mean in Log Scale | 1.46 |
| SD in Original Scale | 37.59 | SD in Log Scale | 1.158 |
| 95% t UCL (Assumes normality) | 19.11 | 95% H-Stat UCL | 10.57 |

DL/2 is not a recommended method, provided for comparisons and historical reasons

**Nonparametric Distribution Free UCL Statistics**

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% KM Approximate Gamma UCL | 22.48 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

When a data set follows an approximate distribution passing only one of the GOF tests,

it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

GRO_3

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 151 | Number of Distinct Observations | 34 |
| | | Number of Missing Observations | 7 |
| Number of Detects | 36 | Number of Non-Detects | 115 |
| Number of Distinct Detects | 32 | Number of Distinct Non-Detects | 2 |
| Minimum Detect | 7.8 | Minimum Non-Detect | 5 |
| Maximum Detect | 3800 | Maximum Non-Detect | 25 |
| Variance Detects | 559934 | Percent Non-Detects | 76.16% |
| Mean Detects | 312.3 | SD Detects | 748.3 |
| Median Detects | 47 | CV Detects | 2.396 |
| Skewness Detects | 3.61 | Kurtosis Detects | 14.25 |
| Mean of Logged Detects | 4.092 | SD of Logged Detects | 1.715 |

**Normal GOF Test on Detects Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.465 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.912 | Detected Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.386 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.17 | Detected Data Not Normal at 1% Significance Level |

Detected Data Not Normal at 1% Significance Level

**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**

| | | | |
|---|---|---|---|
| KM Mean | 78.28 | KM Standard Error of Mean | 31.64 |
| 90KM SD | 383.3 | 95% KM (BCA) UCL | 138.8 |
| 95% KM (t) UCL | 130.6 | 95% KM (Percentile Bootstrap) UCL | 138.3 |
| 95% KM (z) UCL | 130.3 | 95% KM Bootstrap t UCL | 213.1 |
| 90% KM Chebyshev UCL | 173.2 | 95% KM Chebyshev UCL | 216.2 |

| | | | |
|---|---|---|---|
| 97.5% KM Chebyshev UCL | 275.9 | 99% KM Chebyshev UCL | 393.1 |
| | | | |
| **Gamma GOF Tests on Detected Observations Only** | | | |
| A-D Test Statistic | 3.027 | **Anderson-Darling GOF Test** | |
| 5% A-D Critical Value | 0.835 | Detected Data Not Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.256 | **Kolmogorov-Smirnov GOF** | |
| 5% K-S Critical Value | 0.157 | Detected Data Not Gamma Distributed at 5% Significance Level | |
| Detected Data Not Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics on Detected Data Only** | | | |
| k hat (MLE) | 0.399 | k star (bias corrected MLE) | 0.384 |
| Theta hat (MLE) | 783.8 | Theta star (bias corrected MLE) | 813.8 |
| nu hat (MLE) | 28.69 | nu star (bias corrected) | 27.64 |
| Mean (detects) | 312.3 | | |
| | | | |
| **Gamma ROS Statistics using Imputed Non-Detects** | | | |
| GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | |
| GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | |
| For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | |
| This is especially true when the sample size is small. | | | |
| For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | |
| Minimum | 0.01 | Mean | 74.47 |
| Maximum | 3800 | Median | 0.01 |
| SD | 385.3 | CV | 5.174 |
| k hat (MLE) | 0.116 | k star (bias corrected MLE) | 0.118 |
| Theta hat (MLE) | 639.9 | Theta star (bias corrected MLE) | 628.6 |
| nu hat (MLE) | 35.15 | nu star (bias corrected) | 35.78 |
| Adjusted Level of Significance (β) | 0.0484 | | |
| Approximate Chi Square Value (35.78, α) | 23.09 | Adjusted Chi Square Value (35.78, β) | 23 |
| 95% Gamma Approximate UCL | 115.4 | 95% Gamma Adjusted UCL | 115.9 |
| | | | |
| **Estimates of Gamma Parameters using KM Estimates** | | | |
| Mean (KM) | 78.28 | SD (KM) | 383.3 |
| Variance (KM) | 146937 | SE of Mean (KM) | 31.64 |
| k hat (KM) | 0.0417 | k star (KM) | 0.0453 |
| nu hat (KM) | 12.59 | nu star (KM) | 13.68 |
| theta hat (KM) | 1877 | theta star (KM) | 1728 |
| 80% gamma percentile (KM) | 7.323 | 90% gamma percentile (KM) | 104 |
| 95% gamma percentile (KM) | 400 | 99% gamma percentile (KM) | 1769 |
| | | | |
| **Gamma Kaplan-Meier (KM) Statistics** | | | |
| Approximate Chi Square Value (13.68, α) | 6.351 | Adjusted Chi Square Value (13.68, β) | 6.303 |
| 95% KM Approximate Gamma UCL | 168.6 | 95% KM Adjusted Gamma UCL | 169.9 |
| | | | |
| **Lognormal GOF Test on Detected Observations Only** | | | |
| Shapiro Wilk Test Statistic | 0.906 | **Shapiro Wilk GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.945 | Detected Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.121 | **Lilliefors GOF Test** | |

| | | | |
|---|---|---|---|
| 10% Lilliefors Critical Value | 0.134 | Detected Data appear Lognormal at 10% Significance Level | |
| Detected Data appear Approximate Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal ROS Statistics Using Imputed Non-Detects** | | | |
| Mean in Original Scale | 75.08 | Mean in Log Scale | -0.753 |
| SD in Original Scale | 385.2 | SD in Log Scale | 3.695 |
| 95% t UCL (assumes normality of ROS data) | 127 | 95% Percentile Bootstrap UCL | 130.2 |
| 95% BCA Bootstrap UCL | 152.2 | 95% Bootstrap t UCL | 187.7 |
| 95% H-UCL (Log ROS) | 2277 | | |
| | | | |
| **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | |
| KM Mean (logged) | 2.202 | KM Geo Mean | 9.041 |
| KM SD (logged) | 1.342 | 95% Critical H Value (KM-Log) | 2.542 |
| KM Standard Error of Mean (logged) | 0.111 | 95% H-UCL (KM -Log) | 29.39 |
| KM SD (logged) | 1.342 | 95% Critical H Value (KM-Log) | 2.542 |
| KM Standard Error of Mean (logged) | 0.111 | | |
| Note: KM UCLs may be biased low with this dataset. Other substitution method recommended | | | |
| | | | |
| **DL/2 Statistics** | | | |
| **DL/2 Normal** | | **DL/2 Log-Transformed** | |
| Mean in Original Scale | 76.44 | Mean in Log Scale | 1.684 |
| SD in Original Scale | 385 | SD in Log Scale | 1.591 |
| 95% t UCL (Assumes normality) | 128.3 | 95% H-Stat UCL | 27.52 |
| DL/2 is not a recommended method, provided for comparisons and historical reasons | | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Detected Data appear Approximate Lognormal Distributed at 10% Significance Level | | | |
| | | | |
| **Suggested UCL to Use** | | | |
| KM H-UCL | 29.39 | | |
| | | | |
| The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner. | | | |
| Please verify the data were collected from random locations. | | | |
| If the data were collected using judgmental or other non-random methods, | | | |
| then contact a statistician to correctly calculate UCLs. | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |

## UCL Statistics for Data Sets with Non-Detects

## Kosmos - TPH-D

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.2 9/28/2023 11:38:02 AM |
| From File | DRO_ProUCLInput.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**TPH-G**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 118 | Number of Distinct Observations | 25 |
| Number of Detects | 27 | Number of Non-Detects | 91 |
| Number of Distinct Detects | 24 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 62 | Minimum Non-Detect | 50 |
| Maximum Detect | 5100 | Maximum Non-Detect | 50 |
| Variance Detects | 1419218 | Percent Non-Detects | 77.12% |
| Mean Detects | 1045 | SD Detects | 1191 |
| Median Detects | 700 | CV Detects | 1.14 |
| Skewness Detects | 1.915 | Kurtosis Detects | 4.244 |
| Mean of Logged Detects | 6.27 | SD of Logged Detects | 1.298 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.788 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.894 | Detected Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.205 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.194 | Detected Data Not Normal at 1% Significance Level |

**Detected Data Not Normal at 1% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 277.7 | KM Standard Error of Mean | 65.5 |
| 90KM SD | 698.2 | 95% KM (BCA) UCL | 389.4 |
| 95% KM (t) UCL | 386.3 | 95% KM (Percentile Bootstrap) UCL | 383.9 |
| 95% KM (z) UCL | 385.5 | 95% KM Bootstrap t UCL | 437.9 |
| 90% KM Chebyshev UCL | 474.2 | 95% KM Chebyshev UCL | 563.2 |
| 97.5% KM Chebyshev UCL | 686.8 | 99% KM Chebyshev UCL | 929.4 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 0.371 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.779 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.114 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.174 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.862 | k star (bias corrected MLE) | 0.791 |
| Theta hat (MLE) | 1212 | Theta star (bias corrected MLE) | 1321 |

| | | | |
|---|---|---|---|
| nu hat (MLE) | 46.56 | nu star (bias corrected) | 42.72 |
| Mean (detects) | 1045 | | |

**Gamma ROS Statistics using Imputed Non-Detects**

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

| | | | |
|---|---|---|---|
| Minimum | 0.01 | Mean | 239.2 |
| Maximum | 5100 | Median | 0.01 |
| SD | 714 | CV | 2.985 |
| k hat (MLE) | 0.106 | k star (bias corrected MLE) | 0.109 |
| Theta hat (MLE) | 2254 | Theta star (bias corrected MLE) | 2193 |
| nu hat (MLE) | 25.05 | nu star (bias corrected) | 25.74 |
| Adjusted Level of Significance (β) | 0.048 | | |
| Approximate Chi Square Value (25.74, α) | 15.18 | Adjusted Chi Square Value (25.74, β) | 15.08 |
| 95% Gamma Approximate UCL | 405.6 | 95% Gamma Adjusted UCL | 408.3 |

**Estimates of Gamma Parameters using KM Estimates**

| | | | |
|---|---|---|---|
| Mean (KM) | 277.7 | SD (KM) | 698.2 |
| Variance (KM) | 487498 | SE of Mean (KM) | 65.5 |
| k hat (KM) | 0.158 | k star (KM) | 0.16 |
| nu hat (KM) | 37.34 | nu star (KM) | 37.72 |
| theta hat (KM) | 1755 | theta star (KM) | 1737 |
| 80% gamma percentile (KM) | 317.8 | 90% gamma percentile (KM) | 830 |
| 95% gamma percentile (KM) | 1509 | 99% gamma percentile (KM) | 3455 |

**Gamma Kaplan-Meier (KM) Statistics**

| | | | |
|---|---|---|---|
| Approximate Chi Square Value (37.72, α) | 24.66 | Adjusted Chi Square Value (37.72, β) | 24.53 |
| 95% KM Approximate Gamma UCL | 424.9 | 95% KM Adjusted Gamma UCL | 427.1 |

**Lognormal GOF Test on Detected Observations Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.949 | **Shapiro Wilk GOF Test** |
| 10% Shapiro Wilk Critical Value | 0.935 | Detected Data appear Lognormal at 10% Significance Level |
| Lilliefors Test Statistic | 0.124 | **Lilliefors GOF Test** |
| 10% Lilliefors Critical Value | 0.153 | Detected Data appear Lognormal at 10% Significance Level |

Detected Data appear Lognormal at 10% Significance Level

**Lognormal ROS Statistics Using Imputed Non-Detects**

| | | | |
|---|---|---|---|
| Mean in Original Scale | 252.3 | Mean in Log Scale | 2.597 |
| SD in Original Scale | 709.9 | SD in Log Scale | 2.758 |
| 95% t UCL (assumes normality of ROS data) | 360.7 | 95% Percentile Bootstrap UCL | 362.4 |
| 95% BCA Bootstrap UCL | 387.1 | 95% Bootstrap t UCL | 405.1 |
| 95% H-UCL (Log ROS) | 1808 | | |

**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| KM Mean (logged) | 4.452 | KM Geo Mean | 85.77 |

| | | | |
|---|---|---|---|
| KM SD (logged) | 1.163 | 95% Critical H Value (KM-Log) | 2.379 |
| KM Standard Error of Mean (logged) | 0.109 | 95% H-UCL (KM -Log) | 217.9 |
| KM SD (logged) | 1.163 | 95% Critical H Value (KM-Log) | 2.379 |
| KM Standard Error of Mean (logged) | 0.109 | | |

Note: KM UCLs may be biased low with this dataset. Other substitution method recommended

**DL/2 Statistics**

| DL/2 Normal | | DL/2 Log-Transformed | |
|---|---|---|---|
| Mean in Original Scale | 258.4 | Mean in Log Scale | 3.917 |
| SD in Original Scale | 707.6 | SD in Log Scale | 1.425 |
| 95% t UCL (Assumes normality) | 366.4 | 95% H-Stat UCL | 197 |

DL/2 is not a recommended method, provided for comparisons and historical reasons

**Nonparametric Distribution Free UCL Statistics**

Detected Data appear Gamma Distributed at 5% Significance Level

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% KM Approximate Gamma UCL | 424.9 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DRO_1

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 103 | Number of Distinct Observations | 13 |
| | | Number of Missing Observations | 15 |
| Number of Detects | 12 | Number of Non-Detects | 91 |
| Number of Distinct Detects | 12 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 62 | Minimum Non-Detect | 50 |
| Maximum Detect | 370 | Maximum Non-Detect | 50 |
| Variance Detects | 14171 | Percent Non-Detects | 88.35% |
| Mean Detects | 186.8 | SD Detects | 119 |
| Median Detects | 140 | CV Detects | 0.637 |
| Skewness Detects | 0.513 | Kurtosis Detects | -1.642 |
| Mean of Logged Detects | 5.029 | SD of Logged Detects | 0.672 |

**Normal GOF Test on Detects Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.844 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.805 | Detected Data appear Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.213 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.281 | Detected Data appear Normal at 1% Significance Level |

Detected Data appear Normal at 1% Significance Level

**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**

| | | | |
|---|---|---|---|
| KM Mean | 65.94 | KM Standard Error of Mean | 6.037 |
| 90KM SD | 58.66 | 95% KM (BCA) UCL | 76.25 |
| 95% KM (t) UCL | 75.96 | 95% KM (Percentile Bootstrap) UCL | 76.14 |
| 95% KM (z) UCL | 75.87 | 95% KM Bootstrap t UCL | 79.12 |
| 90% KM Chebyshev UCL | 84.05 | 95% KM Chebyshev UCL | 92.25 |
| 97.5% KM Chebyshev UCL | 103.6 | 99% KM Chebyshev UCL | 126 |

**Gamma GOF Tests on Detected Observations Only**

| | | |
|---|---|---|
| A-D Test Statistic | 0.644 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.74 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.201 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.248 | Detected data appear Gamma Distributed at 5% Significance Level |

Detected data appear Gamma Distributed at 5% Significance Level

**Gamma Statistics on Detected Data Only**

| | | | |
|---|---|---|---|
| k hat (MLE) | 2.646 | k star (bias corrected MLE) | 2.04 |
| Theta hat (MLE) | 70.61 | Theta star (bias corrected MLE) | 91.59 |
| nu hat (MLE) | 63.5 | nu star (bias corrected) | 48.96 |
| Mean (detects) | 186.8 | | |

**Gamma ROS Statistics using Imputed Non-Detects**

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

| | | | |
|---|---|---|---|
| Minimum | 0.01 | Mean | 22.48 |
| Maximum | 370 | Median | 0.01 |
| SD | 71.72 | CV | 3.19 |
| k hat (MLE) | 0.125 | k star (bias corrected MLE) | 0.128 |
| Theta hat (MLE) | 180.2 | Theta star (bias corrected MLE) | 176.2 |
| nu hat (MLE) | 25.7 | nu star (bias corrected) | 26.29 |
| Adjusted Level of Significance (β) | 0.0477 | | |
| Approximate Chi Square Value (26.29, α) | 15.6 | Adjusted Chi Square Value (26.29, β) | 15.48 |
| 95% Gamma Approximate UCL | 37.89 | 95% Gamma Adjusted UCL | 38.17 |

**Estimates of Gamma Parameters using KM Estimates**

| | | | |
|---|---|---|---|
| Mean (KM) | 65.94 | SD (KM) | 58.66 |
| Variance (KM) | 3441 | SE of Mean (KM) | 6.037 |
| k hat (KM) | 1.264 | k star (KM) | 1.233 |
| nu hat (KM) | 260.3 | nu star (KM) | 254.1 |
| theta hat (KM) | 52.18 | theta star (KM) | 53.46 |
| 80% gamma percentile (KM) | 104.1 | 90% gamma percentile (KM) | 144.2 |
| 95% gamma percentile (KM) | 183.6 | 99% gamma percentile (KM) | 273.7 |

| Gamma Kaplan-Meier (KM) Statistics | | | |
|---|---|---|---|
| Approximate Chi Square Value (254.09, α) | 218.2 | Adjusted Chi Square Value (254.09, β) | 217.7 |
| 95% KM Approximate Gamma UCL | 76.79 | 95% KM Adjusted Gamma UCL | 76.96 |

| Lognormal GOF Test on Detected Observations Only | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.891 | **Shapiro Wilk GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.883 | Detected Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.187 | **Lilliefors GOF Test** | |
| 10% Lilliefors Critical Value | 0.223 | Detected Data appear Lognormal at 10% Significance Level | |
| Detected Data appear Lognormal at 10% Significance Level | | | |

| Lognormal ROS Statistics Using Imputed Non-Detects | | | |
|---|---|---|---|
| Mean in Original Scale | 32.12 | Mean in Log Scale | 2.031 |
| SD in Original Scale | 69.94 | SD in Log Scale | 1.774 |
| 95% t UCL (assumes normality of ROS data) | 43.56 | 95% Percentile Bootstrap UCL | 44.48 |
| 95% BCA Bootstrap UCL | 46.23 | 95% Bootstrap t UCL | 47.78 |
| 95% H-UCL (Log ROS) | 62.62 | | |

| Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution | | | |
|---|---|---|---|
| KM Mean (logged) | 4.042 | KM Geo Mean | 56.95 |
| KM SD (logged) | 0.42 | 95% Critical H Value (KM-Log) | 1.788 |
| KM Standard Error of Mean (logged) | 0.0433 | 95% H-UCL (KM -Log) | 67.02 |
| KM SD (logged) | 0.42 | 95% Critical H Value (KM-Log) | 1.788 |
| KM Standard Error of Mean (logged) | 0.0433 | | |

| DL/2 Statistics | | | |
|---|---|---|---|
| **DL/2 Normal** | | **DL/2 Log-Transformed** | |
| Mean in Original Scale | 43.85 | Mean in Log Scale | 3.43 |
| SD in Original Scale | 65.2 | SD in Log Scale | 0.624 |
| 95% t UCL (Assumes normality) | 54.52 | 95% H-Stat UCL | 42.2 |
| DL/2 is not a recommended method, provided for comparisons and historical reasons | | | |

| Nonparametric Distribution Free UCL Statistics | | | |
|---|---|---|---|
| Detected Data appear Normal Distributed at 1% Significance Level | | | |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% KM (t) UCL | 75.96 | | |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DRO_2

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 105 | Number of Distinct Observations | 15 |
| | | Number of Missing Observations | 13 |
| Number of Detects | 14 | Number of Non-Detects | 91 |

| | | | |
|---|---|---|---|
| Number of Distinct Detects | 14 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 62 | Minimum Non-Detect | 50 |
| Maximum Detect | 2100 | Maximum Non-Detect | 50 |
| Variance Detects | 313799 | Percent Non-Detects | 86.67% |
| Mean Detects | 388.7 | SD Detects | 560.2 |
| Median Detects | 185 | CV Detects | 1.441 |
| Skewness Detects | 2.648 | Kurtosis Detects | 7.204 |
| Mean of Logged Detects | 5.358 | SD of Logged Detects | 1.046 |

**Normal GOF Test on Detects Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.605 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.825 | Detected Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.37 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.263 | Detected Data Not Normal at 1% Significance Level |

Detected Data Not Normal at 1% Significance Level

**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**

| | | | |
|---|---|---|---|
| KM Mean | 95.16 | KM Standard Error of Mean | 23.12 |
| 90KM SD | 228.3 | 95% KM (BCA) UCL | 135.3 |
| 95% KM (t) UCL | 133.5 | 95% KM (Percentile Bootstrap) UCL | 134.7 |
| 95% KM (z) UCL | 133.2 | 95% KM Bootstrap t UCL | 232.6 |
| 90% KM Chebyshev UCL | 164.5 | 95% KM Chebyshev UCL | 195.9 |
| 97.5% KM Chebyshev UCL | 239.5 | 99% KM Chebyshev UCL | 325.2 |

**Gamma GOF Tests on Detected Observations Only**

| | | |
|---|---|---|
| A-D Test Statistic | 0.954 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.762 | Detected Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.24 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.236 | Detected Data Not Gamma Distributed at 5% Significance Level |

Detected Data Not Gamma Distributed at 5% Significance Level

**Gamma Statistics on Detected Data Only**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.959 | k star (bias corrected MLE) | 0.801 |
| Theta hat (MLE) | 405.5 | Theta star (bias corrected MLE) | 485.4 |
| nu hat (MLE) | 26.84 | nu star (bias corrected) | 22.42 |
| Mean (detects) | 388.7 | | |

**Gamma ROS Statistics using Imputed Non-Detects**

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

| | | | |
|---|---|---|---|
| Minimum | 0.01 | Mean | 51.84 |
| Maximum | 2100 | Median | 0.01 |
| SD | 238.4 | CV | 4.6 |
| k hat (MLE) | 0.111 | k star (bias corrected MLE) | 0.114 |
| Theta hat (MLE) | 467.3 | Theta star (bias corrected MLE) | 454.3 |

| | | | |
|---|---|---|---|
| nu hat (MLE) | 23.29 | nu star (bias corrected) | 23.96 |
| Adjusted Level of Significance (β) | 0.0477 | | |
| Approximate Chi Square Value (23.96, α) | 13.82 | Adjusted Chi Square Value (23.96, β) | 13.71 |
| 95% Gamma Approximate UCL | 89.88 | 95% Gamma Adjusted UCL | 90.59 |

**Estimates of Gamma Parameters using KM Estimates**

| | | | |
|---|---|---|---|
| Mean (KM) | 95.16 | SD (KM) | 228.3 |
| Variance (KM) | 52109 | SE of Mean (KM) | 23.12 |
| k hat (KM) | 0.174 | k star (KM) | 0.175 |
| nu hat (KM) | 36.5 | nu star (KM) | 36.79 |
| theta hat (KM) | 547.6 | theta star (KM) | 543.3 |
| 80% gamma percentile (KM) | 116 | 90% gamma percentile (KM) | 286.6 |
| 95% gamma percentile (KM) | 506.7 | 99% gamma percentile (KM) | 1127 |

**Gamma Kaplan-Meier (KM) Statistics**

| | | | |
|---|---|---|---|
| Approximate Chi Square Value (36.79, α) | 23.9 | Adjusted Chi Square Value (36.79, β) | 23.76 |
| 95% KM Approximate Gamma UCL | 146.5 | 95% KM Adjusted Gamma UCL | 147.3 |

**Lognormal GOF Test on Detected Observations Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.911 | **Shapiro Wilk GOF Test** |
| 10% Shapiro Wilk Critical Value | 0.895 | Detected Data appear Lognormal at 10% Significance Level |
| Lilliefors Test Statistic | 0.155 | **Lilliefors GOF Test** |
| 10% Lilliefors Critical Value | 0.208 | Detected Data appear Lognormal at 10% Significance Level |

Detected Data appear Lognormal at 10% Significance Level

**Lognormal ROS Statistics Using Imputed Non-Detects**

| | | | |
|---|---|---|---|
| Mean in Original Scale | 57.19 | Mean in Log Scale | 0.86 |
| SD in Original Scale | 237.5 | SD in Log Scale | 2.768 |
| 95% t UCL (assumes normality of ROS data) | 95.66 | 95% Percentile Bootstrap UCL | 98.7 |
| 95% BCA Bootstrap UCL | 118.6 | 95% Bootstrap t UCL | 172.1 |
| 95% H-UCL (Log ROS) | 347.8 | | |

**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| KM Mean (logged) | 4.105 | KM Geo Mean | 60.63 |
| KM SD (logged) | 0.614 | 95% Critical H Value (KM-Log) | 1.902 |
| KM Standard Error of Mean (logged) | 0.0622 | 95% H-UCL (KM -Log) | 82.09 |
| KM SD (logged) | 0.614 | 95% Critical H Value (KM-Log) | 1.902 |
| KM Standard Error of Mean (logged) | 0.0622 | | |

**DL/2 Statistics**

| **DL/2 Normal** | | **DL/2 Log-Transformed** | |
|---|---|---|---|
| Mean in Original Scale | 73.5 | Mean in Log Scale | 3.504 |
| SD in Original Scale | 233.8 | SD in Log Scale | 0.819 |
| 95% t UCL (Assumes normality) | 111.4 | 95% H-Stat UCL | 54.82 |

DL/2 is not a recommended method, provided for comparisons and historical reasons

**Nonparametric Distribution Free UCL Statistics**

Detected Data appear Lognormal Distributed at 10% Significance Level

| Suggested UCL to Use | | | |
|---|---|---|---|
| KM H-UCL | 82.09 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DRO_3

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 108 | Number of Distinct Observations | 18 |
| | | Number of Missing Observations | 10 |
| Number of Detects | 17 | Number of Non-Detects | 91 |
| Number of Distinct Detects | 17 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 62 | Minimum Non-Detect | 50 |
| Maximum Detect | 2100 | Maximum Non-Detect | 50 |
| Variance Detects | 330297 | Percent Non-Detects | 84.26% |
| Mean Detects | 477.8 | SD Detects | 574.7 |
| Median Detects | 310 | CV Detects | 1.203 |
| Skewness Detects | 1.928 | Kurtosis Detects | 3.296 |
| Mean of Logged Detects | 5.591 | SD of Logged Detects | 1.096 |

| Normal GOF Test on Detects Only | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.73 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.851 | Detected Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.28 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.241 | Detected Data Not Normal at 1% Significance Level |
| Detected Data Not Normal at 1% Significance Level | | |

| Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs | | | |
|---|---|---|---|
| KM Mean | 117.3 | KM Standard Error of Mean | 26.84 |
| 90KM SD | 270.6 | 95% KM (BCA) UCL | 160.3 |
| 95% KM (t) UCL | 161.9 | 95% KM (Percentile Bootstrap) UCL | 160.8 |
| 95% KM (z) UCL | 161.5 | 95% KM Bootstrap t UCL | 204 |
| 90% KM Chebyshev UCL | 197.8 | 95% KM Chebyshev UCL | 234.3 |
| 97.5% KM Chebyshev UCL | 284.9 | 99% KM Chebyshev UCL | 384.3 |

| Gamma GOF Tests on Detected Observations Only | | |
|---|---|---|
| A-D Test Statistic | 0.631 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.766 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.167 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.215 | Detected data appear Gamma Distributed at 5% Significance Level |

| | | | |
|---|---|---|---|
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics on Detected Data Only** | | | |
| k hat (MLE) | 0.998 | k star (bias corrected MLE) | 0.861 |
| Theta hat (MLE) | 478.5 | Theta star (bias corrected MLE) | 554.6 |
| nu hat (MLE) | 33.95 | nu star (bias corrected) | 29.29 |
| Mean (detects) | 477.8 | | |
| | | | |
| **Gamma ROS Statistics using Imputed Non-Detects** | | | |
| GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | |
| GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | |
| For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | |
| This is especially true when the sample size is small. | | | |
| For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | |
| Minimum | 0.01 | Mean | 75.21 |
| Maximum | 2100 | Median | 0.01 |
| SD | 282.7 | CV | 3.759 |
| k hat (MLE) | 0.11 | k star (bias corrected MLE) | 0.113 |
| Theta hat (MLE) | 686 | Theta star (bias corrected MLE) | 667 |
| nu hat (MLE) | 23.68 | nu star (bias corrected) | 24.36 |
| Adjusted Level of Significance (β) | 0.0478 | | |
| Approximate Chi Square Value (24.36, α) | 14.12 | Adjusted Chi Square Value (24.36, β) | 14.01 |
| 95% Gamma Approximate UCL | 129.7 | 95% Gamma Adjusted UCL | 130.7 |
| | | | |
| **Estimates of Gamma Parameters using KM Estimates** | | | |
| Mean (KM) | 117.3 | SD (KM) | 270.6 |
| Variance (KM) | 73202 | SE of Mean (KM) | 26.84 |
| k hat (KM) | 0.188 | k star (KM) | 0.189 |
| nu hat (KM) | 40.62 | nu star (KM) | 40.83 |
| theta hat (KM) | 623.9 | theta star (KM) | 620.7 |
| 80% gamma percentile (KM) | 149.9 | 90% gamma percentile (KM) | 354.5 |
| 95% gamma percentile (KM) | 613.3 | 99% gamma percentile (KM) | 1333 |
| | | | |
| **Gamma Kaplan-Meier (KM) Statistics** | | | |
| Approximate Chi Square Value (40.83, α) | 27.19 | Adjusted Chi Square Value (40.83, β) | 27.03 |
| 95% KM Approximate Gamma UCL | 176.2 | 95% KM Adjusted Gamma UCL | 177.2 |
| | | | |
| **Lognormal GOF Test on Detected Observations Only** | | | |
| Shapiro Wilk Test Statistic | 0.944 | **Shapiro Wilk GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.91 | Detected Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.125 | **Lilliefors GOF Test** | |
| 10% Lilliefors Critical Value | 0.19 | Detected Data appear Lognormal at 10% Significance Level | |
| Detected Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal ROS Statistics Using Imputed Non-Detects** | | | |
| Mean in Original Scale | 82.2 | Mean in Log Scale | 1.368 |
| SD in Original Scale | 281.1 | SD in Log Scale | 2.741 |
| 95% t UCL (assumes normality of ROS data) | 127.1 | 95% Percentile Bootstrap UCL | 129.9 |

| | | | |
|---|---|---|---|
| 95% BCA Bootstrap UCL | 142.4 | 95% Bootstrap t UCL | 160 |
| 95% H-UCL (Log ROS) | 519.4 | | |

**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| KM Mean (logged) | 4.176 | KM Geo Mean | 65.12 |
| KM SD (logged) | 0.743 | 95% Critical H Value (KM-Log) | 1.996 |
| KM Standard Error of Mean (logged) | 0.0737 | 95% H-UCL (KM -Log) | 99.04 |
| KM SD (logged) | 0.743 | 95% Critical H Value (KM-Log) | 1.996 |
| KM Standard Error of Mean (logged) | 0.0737 | | |

**DL/2 Statistics**

| DL/2 Normal | | DL/2 Log-Transformed | |
|---|---|---|---|
| Mean in Original Scale | 96.27 | Mean in Log Scale | 3.592 |
| SD in Original Scale | 277.2 | SD in Log Scale | 0.966 |
| 95% t UCL (Assumes normality) | 140.5 | 95% H-Stat UCL | 70.97 |

DL/2 is not a recommended method, provided for comparisons and historical reasons

**Nonparametric Distribution Free UCL Statistics**

Detected Data appear Gamma Distributed at 5% Significance Level

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% KM Approximate Gamma UCL | 176.2 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

## UCL Statistics for Data Sets with Non-Detects

## Kosmos - VOCs and PAHs

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.2 10/16/2023 5:02:57 PM |
| From File | VOC_SVOC_Input.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**1,2,4-Trimethylbenzene**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 7 | Number of Distinct Observations | 7 |
| | | Number of Missing Observations | 209 |
| Minimum | 0.061 | Mean | 2.04 |
| Maximum | 5.8 | Median | 1.1 |
| SD | 2.335 | Std. Error of Mean | 0.883 |
| Coefficient of Variation | 1.145 | Skewness | 1.077 |

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,

refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,

but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).

The Chebyshev UCL often results in gross overestimates of the mean.

Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.807 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.73 | Data appear Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.289 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.35 | Data appear Normal at 1% Significance Level |

Data appear Normal at 1% Significance Level

Note GOF tests may be unreliable for small sample sizes

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 3.755 | 95% Adjusted-CLT UCL (Chen-1995) | 3.876 |
| | | 95% Modified-t UCL (Johnson-1978) | 3.815 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.232 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.739 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.177 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.323 | Detected data appear Gamma Distributed at 5% Significance Level |

Detected data appear Gamma Distributed at 5% Significance Level

Note GOF tests may be unreliable for small sample sizes

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.708 | k star (bias corrected MLE) | 0.5 |
| Theta hat (MLE) | 2.88 | Theta star (bias corrected MLE) | 4.081 |
| nu hat (MLE) | 9.916 | nu star (bias corrected) | 7 |
| MLE Mean (bias corrected) | 2.04 | MLE Sd (bias corrected) | 2.885 |
| | | Approximate Chi Square Value (0.05) | 2.17 |
| Adjusted Level of Significance | 0.0158 | Adjusted Chi Square Value | 1.451 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 6.58 | 95% Adjusted Gamma UCL | 9.84 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.95 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.838 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.138 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.28 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -2.797 | Mean of logged Data | -0.139 |
| Maximum of Logged Data | 1.758 | SD of logged Data | 1.651 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 153.2 | 90% Chebyshev (MVUE) UCL | 6.871 |
| 95% Chebyshev (MVUE) UCL | 8.872 | 97.5% Chebyshev (MVUE) UCL | 11.65 |
| 99% Chebyshev (MVUE) UCL | 17.1 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 3.492 | 95% BCA Bootstrap UCL | 3.731 |
| 95% Standard Bootstrap UCL | 3.405 | 95% Bootstrap-t UCL | 7.411 |
| 95% Hall's Bootstrap UCL | 14.63 | 95% Percentile Bootstrap UCL | 3.471 |
| 90% Chebyshev(Mean, Sd) UCL | 4.688 | 95% Chebyshev(Mean, Sd) UCL | 5.887 |
| 97.5% Chebyshev(Mean, Sd) UCL | 7.552 | 99% Chebyshev(Mean, Sd) UCL | 10.82 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 3.755 | | |
| | | | |
| The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner. | | | |
| Please verify the data were collected from random locations. | | | |
| If the data were collected using judgmental or other non-random methods, | | | |
| then contact a statistician to correctly calculate UCLs. | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |

1,2,4-Trimethylbenzene_1

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 6 | Number of Distinct Observations | 6 |
| | | Number of Missing Observations | 210 |
| Minimum | 0.061 | Mean | 2.114 |
| Maximum | 5.8 | Median | 0.86 |
| SD | 2.549 | Std. Error of Mean | 1.041 |
| Coefficient of Variation | 1.206 | Skewness | 0.937 |

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,
refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,
but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).
The Chebyshev UCL often results in gross overestimates of the mean.
Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.785 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.713 | Data appear Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.321 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.373 | Data appear Normal at 1% Significance Level |

Data appear Normal at 1% Significance Level
Note GOF tests may be unreliable for small sample sizes

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 4.21 | 95% Adjusted-CLT UCL (Chen-1995) | 4.25 |
| | | 95% Modified-t UCL (Johnson-1978) | 4.277 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.31 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.729 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.212 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.346 | Detected data appear Gamma Distributed at 5% Significance Level |

Detected data appear Gamma Distributed at 5% Significance Level
Note GOF tests may be unreliable for small sample sizes

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.622 | k star (bias corrected MLE) | 0.422 |
| Theta hat (MLE) | 3.4 | Theta star (bias corrected MLE) | 5.009 |
| nu hat (MLE) | 7.46 | nu star (bias corrected) | 5.064 |
| MLE Mean (bias corrected) | 2.114 | MLE Sd (bias corrected) | 3.254 |
| | | Approximate Chi Square Value (0.05) | 1.182 |
| Adjusted Level of Significance | 0.0122 | Adjusted Chi Square Value | 0.638 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 9.057 | 95% Adjusted Gamma UCL | 16.76 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.944 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.826 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.181 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.298 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -2.797 | Mean of logged Data | -0.24 |
| Maximum of Logged Data | 1.758 | SD of logged Data | 1.784 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 959.8 | 90% Chebyshev (MVUE) UCL | 7.35 |
| 95% Chebyshev (MVUE) UCL | 9.562 | 97.5% Chebyshev (MVUE) UCL | 12.63 |
| 99% Chebyshev (MVUE) UCL | 18.66 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 3.825 | 95% BCA Bootstrap UCL | 3.853 |
| 95% Standard Bootstrap UCL | 3.689 | 95% Bootstrap-t UCL | 12.39 |
| 95% Hall's Bootstrap UCL | 20.21 | 95% Percentile Bootstrap UCL | 3.783 |
| 90% Chebyshev(Mean, Sd) UCL | 5.235 | 95% Chebyshev(Mean, Sd) UCL | 6.649 |
| 97.5% Chebyshev(Mean, Sd) UCL | 8.612 | 99% Chebyshev(Mean, Sd) UCL | 12.47 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 4.21 | | |
| | | | |
| The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner. | | | |
| Please verify the data were collected from random locations. | | | |
| If the data were collected using judgmental or other non-random methods, | | | |
| then contact a statistician to correctly calculate UCLs. | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |
| | | | |
| **1,2,4-Trimethylbenzene_2** | | | |
| | | | |
| **General Statistics** | | | |
| Total Number of Observations | 1 | Number of Distinct Observations | 1 |
| | | Number of Missing Observations | 215 |
| Minimum | 0.061 | Mean | 0.061 |

| | | | |
|---|---|---|---|
| Maximum | 0.061 | Median | 0.061 |

Warning: This data set only has 1 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable 1,2,4-Trimethylbenzene_2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

**1,3,5-Trimethylbenzene**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 4 | Number of Distinct Observations | 4 |
| | | Number of Missing Observations | 212 |
| Minimum | 0.25 | Mean | 1.12 |
| Maximum | 3.4 | Median | 0.415 |
| SD | 1.522 | Std. Error of Mean | 0.761 |
| Coefficient of Variation | 1.359 | Skewness | 1.984 |

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,

refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,

but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).

The Chebyshev UCL often results in gross overestimates of the mean.

Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.675 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.687 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.427 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.413 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 2.911 | 95% Adjusted-CLT UCL (Chen-1995) | 3.178 |
| | | 95% Modified-t UCL (Johnson-1978) | 3.037 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.699 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.667 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.432 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.403 | Data Not Gamma Distributed at 5% Significance Level |

Data Not Gamma Distributed at 5% Significance Level

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.975 | k star (bias corrected MLE) | 0.41 |

| | | | |
|---|---|---|---|
| Theta hat (MLE) | 1.149 | Theta star (bias corrected MLE) | 2.729 |
| nu hat (MLE) | 7.801 | nu star (bias corrected) | 3.283 |
| MLE Mean (bias corrected) | 1.12 | MLE Sd (bias corrected) | 1.748 |
| | | Approximate Chi Square Value (0.05) | 0.461 |
| Adjusted Level of Significance | N/A | Adjusted Chi Square Value | N/A |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 7.975 | 95% Adjusted Gamma UCL | N/A |

**Lognormal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.799 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.792 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.381 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.346 | Data Not Lognormal at 10% Significance Level | |

Data appear Approximate Lognormal at 10% Significance Level

Note GOF tests may be unreliable for small sample sizes

**Lognormal Statistics**

| | | | |
|---|---|---|---|
| Minimum of Logged Data | -1.386 | Mean of logged Data | -0.48 |
| Maximum of Logged Data | 1.224 | SD of logged Data | 1.161 |

**Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| 95% H-UCL | 210.8 | 90% Chebyshev (MVUE) UCL | 2.532 |
| 95% Chebyshev (MVUE) UCL | 3.234 | 97.5% Chebyshev (MVUE) UCL | 4.208 |
| 99% Chebyshev (MVUE) UCL | 6.121 | | |

**Nonparametric Distribution Free UCL Statistics**

Data appear to follow a Discernible Distribution

**Nonparametric Distribution Free UCLs**

| | | | |
|---|---|---|---|
| 95% CLT UCL | 2.372 | 95% BCA Bootstrap UCL | N/A |
| 95% Standard Bootstrap UCL | N/A | 95% Bootstrap-t UCL | N/A |
| 95% Hall's Bootstrap UCL | N/A | 95% Percentile Bootstrap UCL | N/A |
| 90% Chebyshev(Mean, Sd) UCL | 3.403 | 95% Chebyshev(Mean, Sd) UCL | 4.437 |
| 97.5% Chebyshev(Mean, Sd) UCL | 5.872 | 99% Chebyshev(Mean, Sd) UCL | 8.692 |

**Suggested UCL to Use**

Recommendation cannot be provided

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

1,3,5-Trimethylbenzene_1

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 3 | Number of Distinct Observations | 3 |
| | | Number of Missing Observations | 213 |
| Minimum | 0.25 | Mean | 1.357 |
| Maximum | 3.4 | Median | 0.42 |
| SD | 1.772 | Std. Error of Mean | 1.023 |
| Coefficient of Variation | 1.306 | Skewness | 1.714 |

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,
refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,
but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).
The Chebyshev UCL often results in gross overestimates of the mean.
Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.79 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.753 | Data appear Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.368 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.429 | Data appear Normal at 1% Significance Level |

Data appear Normal at 1% Significance Level
Note GOF tests may be unreliable for small sample sizes

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 4.343 | 95% Adjusted-CLT UCL (Chen-1995) | 4.121 |
| | | 95% Modified-t UCL (Johnson-1978) | 4.512 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.452 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.642 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.378 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.442 | Detected data appear Gamma Distributed at 5% Significance Level |

Data Not Gamma Distributed at 5% Significance Level

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.901 | k star (bias corrected MLE) | N/A |
| Theta hat (MLE) | 1.505 | Theta star (bias corrected MLE) | N/A |
| nu hat (MLE) | 5.409 | nu star (bias corrected) | N/A |
| MLE Mean (bias corrected) | N/A | MLE Sd (bias corrected) | N/A |
| | | Approximate Chi Square Value (0.05) | N/A |
| Adjusted Level of Significance | N/A | Adjusted Chi Square Value | N/A |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | N/A | 95% Adjusted Gamma UCL | N/A |

| Lognormal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.892 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.789 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.314 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.389 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -1.386 | Mean of logged Data | -0.343 |
| Maximum of Logged Data | 1.224 | SD of logged Data | 1.382 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 84376227 | 90% Chebyshev (MVUE) UCL | 3.665 |
| 95% Chebyshev (MVUE) UCL | 4.764 | 97.5% Chebyshev (MVUE) UCL | 6.29 |
| 99% Chebyshev (MVUE) UCL | 9.287 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 3.039 | 95% BCA Bootstrap UCL | N/A |
| 95% Standard Bootstrap UCL | N/A | 95% Bootstrap-t UCL | N/A |
| 95% Hall's Bootstrap UCL | N/A | 95% Percentile Bootstrap UCL | N/A |
| 90% Chebyshev(Mean, Sd) UCL | 4.425 | 95% Chebyshev(Mean, Sd) UCL | 5.815 |
| 97.5% Chebyshev(Mean, Sd) UCL | 7.744 | 99% Chebyshev(Mean, Sd) UCL | 11.53 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 4.343 | | |
| Recommended UCL exceeds the maximum observation | | | |
| | | | |
| The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner. | | | |
| Please verify the data were collected from random locations. | | | |
| If the data were collected using judgmental or other non-random methods, | | | |
| then contact a statistician to correctly calculate UCLs. | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |
| | | | |
| **1,3,5-Trimethylbenzene_2** | | | |
| | | | |
| **General Statistics** | | | |
| Total Number of Observations | 1 | Number of Distinct Observations | 1 |
| | | Number of Missing Observations | 215 |
| Minimum | 0.25 | Mean | 0.25 |
| Maximum | 0.25 | Median | 0.25 |

Warning: This data set only has 1 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable 1,3,5-Trimethylbenzene_2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

**Acetone**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 1 | Number of Distinct Observations | 1 |
| | | Number of Missing Observations | 215 |
| Minimum | 0.51 | Mean | 0.51 |
| Maximum | 0.51 | Median | 0.51 |

Warning: This data set only has 1 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Acetone was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

**Acetone_1**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 0 | Number of Distinct Observations | 0 |
| | | Number of Missing Observations | 216 |
| Minimum | N/A | Mean | N/A |
| Maximum | N/A | Median | N/A |

Warning: This data set only has 0 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Acetone_1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

**Benzene**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 11 | Number of Distinct Observations | 9 |

| | | | |
|---|---|---|---|
| | | Number of Missing Observations | 205 |
| Minimum | 0.001 | Mean | 0.0181 |
| Maximum | 0.13 | Median | 0.0022 |
| SD | 0.0387 | Std. Error of Mean | 0.0117 |
| Coefficient of Variation | 2.139 | Skewness | 2.903 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.513 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.792 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.378 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.291 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0392 | 95% Adjusted-CLT UCL (Chen-1995) | 0.0482 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.0409 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 1.449 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.79 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.38 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.271 | Data Not Gamma Distributed at 5% Significance Level |

Data Not Gamma Distributed at 5% Significance Level

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.452 | k star (bias corrected MLE) | 0.389 |
| Theta hat (MLE) | 0.04 | Theta star (bias corrected MLE) | 0.0465 |
| nu hat (MLE) | 9.939 | nu star (bias corrected) | 8.562 |
| MLE Mean (bias corrected) | 0.0181 | MLE Sd (bias corrected) | 0.029 |
| | | Approximate Chi Square Value (0.05) | 3.065 |
| Adjusted Level of Significance | 0.0278 | Adjusted Chi Square Value | 2.553 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 0.0505 | 95% Adjusted Gamma UCL | 0.0606 |

**Lognormal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.817 | **Shapiro Wilk Lognormal GOF Test** |
| 10% Shapiro Wilk Critical Value | 0.876 | Data Not Lognormal at 10% Significance Level |
| Lilliefors Test Statistic | 0.311 | **Lilliefors Lognormal GOF Test** |
| 10% Lilliefors Critical Value | 0.231 | Data Not Lognormal at 10% Significance Level |

Data Not Lognormal at 10% Significance Level

**Lognormal Statistics**

| | | | |
|---|---|---|---|
| Minimum of Logged Data | -6.908 | Mean of logged Data | -5.441 |
| Maximum of Logged Data | -2.04 | SD of logged Data | 1.582 |

**Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| 95% H-UCL | 0.125 | 90% Chebyshev (MVUE) UCL | 0.0314 |
| 95% Chebyshev (MVUE) UCL | 0.04 | 97.5% Chebyshev (MVUE) UCL | 0.052 |
| 99% Chebyshev (MVUE) UCL | 0.0755 | | |

**Nonparametric Distribution Free UCL Statistics**

Data do not follow a Discernible Distribution

**Nonparametric Distribution Free UCLs**

| | | | |
|---|---|---|---|
| 95% CLT UCL | 0.0373 | 95% BCA Bootstrap UCL | 0.05 |
| 95% Standard Bootstrap UCL | 0.0366 | 95% Bootstrap-t UCL | 0.152 |
| 95% Hall's Bootstrap UCL | 0.16 | 95% Percentile Bootstrap UCL | 0.0399 |
| 90% Chebyshev(Mean, Sd) UCL | 0.0531 | 95% Chebyshev(Mean, Sd) UCL | 0.0689 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.0909 | 99% Chebyshev(Mean, Sd) UCL | 0.134 |

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0392 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Cymene**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 7 | Number of Distinct Observations | 7 |
| | | Number of Missing Observations | 209 |
| Minimum | 0.067 | Mean | 0.6 |
| Maximum | 1.5 | Median | 0.44 |
| SD | 0.574 | Std. Error of Mean | 0.217 |
| Coefficient of Variation | 0.957 | Skewness | 0.946 |

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,

refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,

but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).

The Chebyshev UCL often results in gross overestimates of the mean.

Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.838 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.73 | Data appear Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.256 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.35 | Data appear Normal at 1% Significance Level |

| | | | |
|---|---|---|---|
| Data appear Normal at 1% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Assuming Normal Distribution** | | | |
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 1.021 | 95% Adjusted-CLT UCL (Chen-1995) | 1.039 |
| | | 95% Modified-t UCL (Johnson-1978) | 1.034 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.309 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.725 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.204 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.319 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 1.175 | k star (bias corrected MLE) | 0.766 |
| Theta hat (MLE) | 0.51 | Theta star (bias corrected MLE) | 0.782 |
| nu hat (MLE) | 16.45 | nu star (bias corrected) | 10.73 |
| MLE Mean (bias corrected) | 0.6 | MLE Sd (bias corrected) | 0.685 |
| | | Approximate Chi Square Value (0.05) | 4.403 |
| Adjusted Level of Significance | 0.0158 | Adjusted Chi Square Value | 3.266 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 1.461 | 95% Adjusted Gamma UCL | 1.97 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.946 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.838 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.165 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.28 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -2.703 | Mean of logged Data | -0.994 |
| Maximum of Logged Data | 0.405 | SD of logged Data | 1.137 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 4.715 | 90% Chebyshev (MVUE) UCL | 1.425 |
| 95% Chebyshev (MVUE) UCL | 1.788 | 97.5% Chebyshev (MVUE) UCL | 2.293 |
| 99% Chebyshev (MVUE) UCL | 3.283 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |

| | | | |
|---|---|---|---|
| 95% CLT UCL | 0.956 | 95% BCA Bootstrap UCL | 1.007 |
| 95% Standard Bootstrap UCL | 0.941 | 95% Bootstrap-t UCL | 1.587 |
| 95% Hall's Bootstrap UCL | 3.524 | 95% Percentile Bootstrap UCL | 0.954 |
| 90% Chebyshev(Mean, Sd) UCL | 1.25 | 95% Chebyshev(Mean, Sd) UCL | 1.545 |
| 97.5% Chebyshev(Mean, Sd) UCL | 1.954 | 99% Chebyshev(Mean, Sd) UCL | 2.757 |

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% Student's-t UCL | 1.021 | | |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Cymene_1**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 5 | Number of Distinct Observations | 5 |
| | | Number of Missing Observations | 211 |
| Minimum | 0.067 | Mean | 0.643 |
| Maximum | 1.5 | Median | 0.18 |
| SD | 0.696 | Std. Error of Mean | 0.311 |
| Coefficient of Variation | 1.081 | Skewness | 0.637 |

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,

refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,

but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).

The Chebyshev UCL often results in gross overestimates of the mean.

Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.775 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.686 | Data appear Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.347 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.396 | Data appear Normal at 1% Significance Level |

Data appear Normal at 1% Significance Level

Note GOF tests may be unreliable for small sample sizes

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 1.307 | 95% Adjusted-CLT UCL (Chen-1995) | 1.25 |
| | | 95% Modified-t UCL (Johnson-1978) | 1.321 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.55 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.695 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.328 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.365 | Detected data appear Gamma Distributed at 5% Significance Level |

Detected data appear Gamma Distributed at 5% Significance Level

Note GOF tests may be unreliable for small sample sizes

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.883 | k star (bias corrected MLE) | 0.487 |
| Theta hat (MLE) | 0.728 | Theta star (bias corrected MLE) | 1.322 |
| nu hat (MLE) | 8.833 | nu star (bias corrected) | 4.866 |
| MLE Mean (bias corrected) | 0.643 | MLE Sd (bias corrected) | 0.922 |
| | | Approximate Chi Square Value (0.05) | 1.091 |
| Adjusted Level of Significance | 0.0086 | Adjusted Chi Square Value | 0.499 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 2.87 | 95% Adjusted Gamma UCL | 6.274 |

**Lognormal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.869 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.806 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.272 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.319 | Data appear Lognormal at 10% Significance Level | |

Data appear Lognormal at 10% Significance Level

Note GOF tests may be unreliable for small sample sizes

**Lognormal Statistics**

| | | | |
|---|---|---|---|
| Minimum of Logged Data | -2.703 | Mean of logged Data | -1.104 |
| Maximum of Logged Data | 0.405 | SD of logged Data | 1.371 |

**Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| 95% H-UCL | 75.23 | 90% Chebyshev (MVUE) UCL | 1.752 |
| 95% Chebyshev (MVUE) UCL | 2.25 | 97.5% Chebyshev (MVUE) UCL | 2.942 |
| 99% Chebyshev (MVUE) UCL | 4.3 | | |

**Nonparametric Distribution Free UCL Statistics**

Data appear to follow a Discernible Distribution

**Nonparametric Distribution Free UCLs**

| | | | |
|---|---|---|---|
| 95% CLT UCL | 1.155 | 95% BCA Bootstrap UCL | 1.173 |
| 95% Standard Bootstrap UCL | 1.105 | 95% Bootstrap-t UCL | 6.989 |
| 95% Hall's Bootstrap UCL | 12.77 | 95% Percentile Bootstrap UCL | 1.154 |
| 90% Chebyshev(Mean, Sd) UCL | 1.577 | 95% Chebyshev(Mean, Sd) UCL | 2 |
| 97.5% Chebyshev(Mean, Sd) UCL | 2.586 | 99% Chebyshev(Mean, Sd) UCL | 3.739 |

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% Student's-t UCL | 1.307 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Cymene_2**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 3 | Number of Distinct Observations | 3 |
| | | Number of Missing Observations | 213 |
| Minimum | 0.067 | Mean | 0.139 |
| Maximum | 0.18 | Median | 0.17 |
| SD | 0.0626 | Std. Error of Mean | 0.0361 |
| Coefficient of Variation | 0.45 | Skewness | -1.682 |

**Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,**

**refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,**

**but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).**

**The Chebyshev UCL often results in gross overestimates of the mean.**

**Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.**

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.816 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.753 | Data appear Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.357 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.429 | Data appear Normal at 1% Significance Level |

**Data appear Normal at 1% Significance Level**

**Note GOF tests may be unreliable for small sample sizes**

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.244 | 95% Adjusted-CLT UCL (Chen-1995) | 0.161 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.239 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.541 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.637 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.404 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.433 | Detected data appear Gamma Distributed at 5% Significance Level |

**Data Not Gamma Distributed at 5% Significance Level**

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 5.718 | k star (bias corrected MLE) | N/A |
| Theta hat (MLE) | 0.0243 | Theta star (bias corrected MLE) | N/A |
| nu hat (MLE) | 34.31 | nu star (bias corrected) | N/A |
| MLE Mean (bias corrected) | N/A | MLE Sd (bias corrected) | N/A |
| | | Approximate Chi Square Value (0.05) | N/A |

| | | | |
|---|---|---|---|
| Adjusted Level of Significance | N/A | Adjusted Chi Square Value | N/A |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | N/A | 95% Adjusted Gamma UCL | N/A |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.793 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.789 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.367 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.389 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -2.703 | Mean of logged Data | -2.063 |
| Maximum of Logged Data | -1.715 | SD of logged Data | 0.555 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 2.507 | 90% Chebyshev (MVUE) UCL | 0.27 |
| 95% Chebyshev (MVUE) UCL | 0.329 | 97.5% Chebyshev (MVUE) UCL | 0.411 |
| 99% Chebyshev (MVUE) UCL | 0.572 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.198 | 95% BCA Bootstrap UCL | N/A |
| 95% Standard Bootstrap UCL | N/A | 95% Bootstrap-t UCL | N/A |
| 95% Hall's Bootstrap UCL | N/A | 95% Percentile Bootstrap UCL | N/A |
| 90% Chebyshev(Mean, Sd) UCL | 0.247 | 95% Chebyshev(Mean, Sd) UCL | 0.296 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.365 | 99% Chebyshev(Mean, Sd) UCL | 0.498 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 0.244 | | |
| Recommended UCL exceeds the maximum observation | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |
| **Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be** | | | |
| **reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.** | | | |
| | | | |
| | | | |
| **Ethylbenzene** | | | |
| | | | |
| **General Statistics** | | | |
| Total Number of Observations | 25 | Number of Distinct Observations | 20 |

| | | | |
|---|---|---|---|
| | | Number of Missing Observations | 191 |
| Minimum | 0.0012 | Mean | 0.218 |
| Maximum | 3.1 | Median | 0.0064 |
| SD | 0.656 | Std. Error of Mean | 0.131 |
| Coefficient of Variation | 3.007 | Skewness | 3.98 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.384 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.886 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.405 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.201 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.442 | 95% Adjusted-CLT UCL (Chen-1995) | 0.545 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.46 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 3.728 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.875 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.363 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.192 | Data Not Gamma Distributed at 5% Significance Level |

Data Not Gamma Distributed at 5% Significance Level

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.251 | k star (bias corrected MLE) | 0.247 |
| Theta hat (MLE) | 0.869 | Theta star (bias corrected MLE) | 0.881 |
| nu hat (MLE) | 12.53 | nu star (bias corrected) | 12.36 |
| MLE Mean (bias corrected) | 0.218 | MLE Sd (bias corrected) | 0.438 |
| | | Approximate Chi Square Value (0.05) | 5.468 |
| Adjusted Level of Significance | 0.0395 | Adjusted Chi Square Value | 5.157 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 0.493 | 95% Adjusted Gamma UCL | 0.523 |

**Lognormal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.82 | **Shapiro Wilk Lognormal GOF Test** |
| 10% Shapiro Wilk Critical Value | 0.931 | Data Not Lognormal at 10% Significance Level |
| Lilliefors Test Statistic | 0.275 | **Lilliefors Lognormal GOF Test** |
| 10% Lilliefors Critical Value | 0.159 | Data Not Lognormal at 10% Significance Level |

Data Not Lognormal at 10% Significance Level

**Lognormal Statistics**

| | | | |
|---|---|---|---|
| Minimum of Logged Data | -6.725 | Mean of logged Data | -4.355 |
| Maximum of Logged Data | 1.131 | SD of logged Data | 2.174 |

**Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| 95% H-UCL | 0.904 | 90% Chebyshev (MVUE) UCL | 0.285 |
| 95% Chebyshev (MVUE) UCL | 0.366 | 97.5% Chebyshev (MVUE) UCL | 0.479 |
| 99% Chebyshev (MVUE) UCL | 0.701 | | |

**Nonparametric Distribution Free UCL Statistics**

Data do not follow a Discernible Distribution

**Nonparametric Distribution Free UCLs**

| | | | |
|---|---|---|---|
| 95% CLT UCL | 0.434 | 95% BCA Bootstrap UCL | 0.544 |
| 95% Standard Bootstrap UCL | 0.429 | 95% Bootstrap-t UCL | 1.242 |
| 95% Hall's Bootstrap UCL | 1.314 | 95% Percentile Bootstrap UCL | 0.45 |
| 90% Chebyshev(Mean, Sd) UCL | 0.611 | 95% Chebyshev(Mean, Sd) UCL | 0.789 |
| 97.5% Chebyshev(Mean, Sd) UCL | 1.037 | 99% Chebyshev(Mean, Sd) UCL | 1.522 |

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% Student's-t UCL | 0.442 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Ethylbenzene_1**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 24 | Number of Distinct Observations | 19 |
| | | Number of Missing Observations | 192 |
| Minimum | 0.0012 | Mean | 0.177 |
| Maximum | 3.1 | Median | 0.0057 |
| SD | 0.636 | Std. Error of Mean | 0.13 |
| Coefficient of Variation | 3.593 | Skewness | 4.597 |

**Normal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.305 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk Critical Value | 0.884 | Data Not Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.417 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.205 | Data Not Normal at 1% Significance Level | |

Data Not Normal at 1% Significance Level

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.4 | 95% Adjusted-CLT UCL (Chen-1995) | 0.521 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.42 |

| Gamma GOF Test | | | |
|---|---|---|---|
| A-D Test Statistic | 4.017 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.874 | Data Not Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.375 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.195 | Data Not Gamma Distributed at 5% Significance Level | |
| Data Not Gamma Distributed at 5% Significance Level | | | |

| Gamma Statistics | | | |
|---|---|---|---|
| k hat (MLE) | 0.252 | k star (bias corrected MLE) | 0.248 |
| Theta hat (MLE) | 0.702 | Theta star (bias corrected MLE) | 0.713 |
| nu hat (MLE) | 12.1 | nu star (bias corrected) | 11.92 |
| MLE Mean (bias corrected) | 0.177 | MLE Sd (bias corrected) | 0.355 |
| | | Approximate Chi Square Value (0.05) | 5.176 |
| Adjusted Level of Significance | 0.0392 | Adjusted Chi Square Value | 4.866 |

| Assuming Gamma Distribution | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 0.408 | 95% Adjusted Gamma UCL | 0.434 |

| Lognormal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.816 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.93 | Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.275 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.162 | Data Not Lognormal at 10% Significance Level | |
| Data Not Lognormal at 10% Significance Level | | | |

| Lognormal Statistics | | | |
|---|---|---|---|
| Minimum of Logged Data | -6.725 | Mean of logged Data | -4.545 |
| Maximum of Logged Data | 1.131 | SD of logged Data | 2 |

| Assuming Lognormal Distribution | | | |
|---|---|---|---|
| 95% H-UCL | 0.432 | 90% Chebyshev (MVUE) UCL | 0.164 |
| 95% Chebyshev (MVUE) UCL | 0.21 | 97.5% Chebyshev (MVUE) UCL | 0.273 |
| 99% Chebyshev (MVUE) UCL | 0.397 | | |

| Nonparametric Distribution Free UCL Statistics |
|---|
| Data do not follow a Discernible Distribution |

| Nonparametric Distribution Free UCLs | | | |
|---|---|---|---|
| 95% CLT UCL | 0.391 | 95% BCA Bootstrap UCL | 0.563 |
| 95% Standard Bootstrap UCL | 0.385 | 95% Bootstrap-t UCL | 2.062 |
| 95% Hall's Bootstrap UCL | 1.846 | 95% Percentile Bootstrap UCL | 0.424 |
| 90% Chebyshev(Mean, Sd) UCL | 0.567 | 95% Chebyshev(Mean, Sd) UCL | 0.743 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.988 | 99% Chebyshev(Mean, Sd) UCL | 1.469 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% Student's-t UCL | 0.4 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Ethylbenzene_2**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 22 | Number of Distinct Observations | 17 |
| | | Number of Missing Observations | 194 |
| Minimum | 0.0012 | Mean | 0.025 |
| Maximum | 0.27 | Median | 0.0046 |
| SD | 0.0604 | Std. Error of Mean | 0.0129 |
| Coefficient of Variation | 2.419 | Skewness | 3.632 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.427 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.878 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.429 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.214 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0471 | 95% Adjusted-CLT UCL (Chen-1995) | 0.0568 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.0488 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 2.899 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.806 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.35 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.196 | Data Not Gamma Distributed at 5% Significance Level |

Data Not Gamma Distributed at 5% Significance Level

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.492 | k star (bias corrected MLE) | 0.455 |
| Theta hat (MLE) | 0.0508 | Theta star (bias corrected MLE) | 0.0549 |
| nu hat (MLE) | 21.63 | nu star (bias corrected) | 20.02 |
| MLE Mean (bias corrected) | 0.025 | MLE Sd (bias corrected) | 0.037 |
| | | Approximate Chi Square Value (0.05) | 10.86 |
| Adjusted Level of Significance | 0.0386 | Adjusted Chi Square Value | 10.36 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 0.046 | 95% Adjusted Gamma UCL | 0.0482 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.857 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.926 | Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.242 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.169 | Data Not Lognormal at 10% Significance Level | |
| Data Not Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -6.725 | Mean of logged Data | -4.986 |
| Maximum of Logged Data | -1.309 | SD of logged Data | 1.367 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 0.0443 | 90% Chebyshev (MVUE) UCL | 0.033 |
| 95% Chebyshev (MVUE) UCL | 0.0406 | 97.5% Chebyshev (MVUE) UCL | 0.0512 |
| 99% Chebyshev (MVUE) UCL | 0.072 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data do not follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.0461 | 95% BCA Bootstrap UCL | 0.0586 |
| 95% Standard Bootstrap UCL | 0.0453 | 95% Bootstrap-t UCL | 0.102 |
| 95% Hall's Bootstrap UCL | 0.11 | 95% Percentile Bootstrap UCL | 0.0478 |
| 90% Chebyshev(Mean, Sd) UCL | 0.0636 | 95% Chebyshev(Mean, Sd) UCL | 0.081 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.105 | 99% Chebyshev(Mean, Sd) UCL | 0.153 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 0.0471 | | |
| | | | |
| The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner. | | | |
| Please verify the data were collected from random locations. | | | |
| If the data were collected using judgmental or other non-random methods, | | | |
| then contact a statistician to correctly calculate UCLs. | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |
| | | | |
| **Hexane** | | | |
| | | | |
| **General Statistics** | | | |
| Total Number of Observations | 7 | Number of Distinct Observations | 3 |
| | | Number of Missing Observations | 209 |
| Minimum | 0.25 | Mean | 1.187 |
| Maximum | 6.4 | Median | 0.25 |

| | | | |
|---|---|---|---|
| SD | 2.304 | Std. Error of Mean | 0.871 |
| Coefficient of Variation | 1.941 | Skewness | 2.622 |

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,
refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,
but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).
The Chebyshev UCL often results in gross overestimates of the mean.
Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.492 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.73 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.448 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.35 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 2.879 | 95% Adjusted-CLT UCL (Chen-1995) | 3.541 |
| | | 95% Modified-t UCL (Johnson-1978) | 3.023 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 1.635 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.743 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.421 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.325 | Data Not Gamma Distributed at 5% Significance Level |

Data Not Gamma Distributed at 5% Significance Level

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.64 | k star (bias corrected MLE) | 0.461 |
| Theta hat (MLE) | 1.854 | Theta star (bias corrected MLE) | 2.575 |
| nu hat (MLE) | 8.964 | nu star (bias corrected) | 6.455 |
| MLE Mean (bias corrected) | 1.187 | MLE Sd (bias corrected) | 1.748 |
| | | Approximate Chi Square Value (0.05) | 1.877 |
| Adjusted Level of Significance | 0.0158 | Adjusted Chi Square Value | 1.225 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 4.083 | 95% Adjusted Gamma UCL | 6.254 |

**Lognormal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.601 | **Shapiro Wilk Lognormal GOF Test** |
| 10% Shapiro Wilk Critical Value | 0.838 | Data Not Lognormal at 10% Significance Level |
| Lilliefors Test Statistic | 0.404 | **Lilliefors Lognormal GOF Test** |
| 10% Lilliefors Critical Value | 0.28 | Data Not Lognormal at 10% Significance Level |

Data Not Lognormal at 10% Significance Level

**Lognormal Statistics**

| | | | |
|---|---|---|---|
| Minimum of Logged Data | -1.386 | Mean of logged Data | -0.784 |

| | | | |
|---|---|---|---|
| Maximum of Logged Data | 1.856 | SD of logged Data | 1.219 |

**Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| 95% H-UCL | 8.302 | 90% Chebyshev (MVUE) UCL | 1.964 |
| 95% Chebyshev (MVUE) UCL | 2.479 | 97.5% Chebyshev (MVUE) UCL | 3.194 |
| 99% Chebyshev (MVUE) UCL | 4.599 | | |

**Nonparametric Distribution Free UCL Statistics**

Data do not follow a Discernible Distribution

**Nonparametric Distribution Free UCLs**

| | | | |
|---|---|---|---|
| 95% CLT UCL | 2.619 | 95% BCA Bootstrap UCL | N/A |
| 95% Standard Bootstrap UCL | N/A | 95% Bootstrap-t UCL | N/A |
| 95% Hall's Bootstrap UCL | N/A | 95% Percentile Bootstrap UCL | N/A |
| 90% Chebyshev(Mean, Sd) UCL | 3.799 | 95% Chebyshev(Mean, Sd) UCL | 4.983 |
| 97.5% Chebyshev(Mean, Sd) UCL | 6.625 | 99% Chebyshev(Mean, Sd) UCL | 9.851 |

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| Recommendation cannot be provided | | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Hexane_1**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 5 | Number of Distinct Observations | 3 |
| | | Number of Missing Observations | 211 |
| Minimum | 0.25 | Mean | 1.562 |
| Maximum | 6.4 | Median | 0.25 |
| SD | 2.71 | Std. Error of Mean | 1.212 |
| Coefficient of Variation | 1.735 | Skewness | 2.213 |

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,

refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,

but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).

The Chebyshev UCL often results in gross overestimates of the mean.

Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

**Normal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.596 | **Shapiro Wilk GOF Test** | |

| | | | |
|---|---|---|---|
| 1% Shapiro Wilk Critical Value | 0.686 | Data Not Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.43 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.396 | Data Not Normal at 1% Significance Level | |
| Data Not Normal at 1% Significance Level | | | |
| | | | |
| **Assuming Normal Distribution** | | | |
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 4.146 | 95% Adjusted-CLT UCL (Chen-1995) | 4.837 |
| | | 95% Modified-t UCL (Johnson-1978) | 4.346 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.927 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.705 | Data Not Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.359 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.369 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data follow Appr. Gamma Distribution at 5% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 0.621 | k star (bias corrected MLE) | 0.382 |
| Theta hat (MLE) | 2.514 | Theta star (bias corrected MLE) | 4.091 |
| nu hat (MLE) | 6.212 | nu star (bias corrected) | 3.818 |
| MLE Mean (bias corrected) | 1.562 | MLE Sd (bias corrected) | 2.528 |
| | | Approximate Chi Square Value (0.05) | 0.651 |
| Adjusted Level of Significance | 0.0086 | Adjusted Chi Square Value | 0.262 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 9.159 | 95% Adjusted Gamma UCL | 22.75 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.722 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.806 | Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.326 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.319 | Data Not Lognormal at 10% Significance Level | |
| Data Not Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -1.386 | Mean of logged Data | -0.544 |
| Maximum of Logged Data | 1.856 | SD of logged Data | 1.406 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 172.7 | 90% Chebyshev (MVUE) UCL | 3.207 |
| 95% Chebyshev (MVUE) UCL | 4.126 | 97.5% Chebyshev (MVUE) UCL | 5.401 |
| 99% Chebyshev (MVUE) UCL | 7.907 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |

| Nonparametric Distribution Free UCLs | | | |
|---|---|---|---|
| 95% CLT UCL | 3.556 | 95% BCA Bootstrap UCL | N/A |
| 95% Standard Bootstrap UCL | N/A | 95% Bootstrap-t UCL | N/A |
| 95% Hall's Bootstrap UCL | N/A | 95% Percentile Bootstrap UCL | N/A |
| 90% Chebyshev(Mean, Sd) UCL | 5.198 | 95% Chebyshev(Mean, Sd) UCL | 6.845 |
| 97.5% Chebyshev(Mean, Sd) UCL | 9.132 | 99% Chebyshev(Mean, Sd) UCL | 13.62 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| Recommendation cannot be provided | | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

When a data set follows an approximate distribution passing only one of the GOF tests,

it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Hexane_2**

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 1 | Number of Distinct Observations | 1 |
| | | Number of Missing Observations | 215 |
| Minimum | 0.25 | Mean | 0.25 |
| Maximum | 0.25 | Median | 0.25 |

Warning: This data set only has 1 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Hexane_2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

**Isopropylbenzene**

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 11 | Number of Distinct Observations | 10 |
| | | Number of Missing Observations | 205 |
| Minimum | 0.091 | Mean | 0.459 |
| Maximum | 1.7 | Median | 0.17 |
| SD | 0.535 | Std. Error of Mean | 0.161 |

| | | | |
|---|---|---|---|
| Coefficient of Variation | 1.165 | Skewness | 1.665 |
| | | | |
| **Normal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.74 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk Critical Value | 0.792 | Data Not Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.286 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.291 | Data appear Normal at 1% Significance Level | |
| Data appear Approximate Normal at 1% Significance Level | | | |
| | | | |
| **Assuming Normal Distribution** | | | |
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 0.752 | 95% Adjusted-CLT UCL (Chen-1995) | 0.811 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.765 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.759 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.751 | Data Not Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.246 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.262 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data follow Appr. Gamma Distribution at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 1.049 | k star (bias corrected MLE) | 0.824 |
| Theta hat (MLE) | 0.438 | Theta star (bias corrected MLE) | 0.558 |
| nu hat (MLE) | 23.08 | nu star (bias corrected) | 18.12 |
| MLE Mean (bias corrected) | 0.459 | MLE Sd (bias corrected) | 0.506 |
| | | Approximate Chi Square Value (0.05) | 9.476 |
| Adjusted Level of Significance | 0.0278 | Adjusted Chi Square Value | 8.475 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 0.878 | 95% Adjusted Gamma UCL | 0.982 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.874 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.876 | Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.208 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.231 | Data appear Lognormal at 10% Significance Level | |
| Data appear Approximate Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -2.397 | Mean of logged Data | -1.325 |
| Maximum of Logged Data | 0.531 | SD of logged Data | 1.064 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 1.338 | 90% Chebyshev (MVUE) UCL | 0.882 |
| 95% Chebyshev (MVUE) UCL | 1.084 | 97.5% Chebyshev (MVUE) UCL | 1.364 |
| 99% Chebyshev (MVUE) UCL | 1.915 | | |

| Nonparametric Distribution Free UCL Statistics | | | |
|---|---|---|---|
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.725 | 95% BCA Bootstrap UCL | 0.816 |
| 95% Standard Bootstrap UCL | 0.714 | 95% Bootstrap-t UCL | 1.132 |
| 95% Hall's Bootstrap UCL | 1.143 | 95% Percentile Bootstrap UCL | 0.743 |
| 90% Chebyshev(Mean, Sd) UCL | 0.943 | 95% Chebyshev(Mean, Sd) UCL | 1.162 |
| 97.5% Chebyshev(Mean, Sd) UCL | 1.467 | 99% Chebyshev(Mean, Sd) UCL | 2.065 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 0.752 | | |
| | | | |
| The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner. | | | |
| Please verify the data were collected from random locations. | | | |
| If the data were collected using judgmental or other non-random methods, | | | |
| then contact a statistician to correctly calculate UCLs. | | | |
| | | | |
| When a data set follows an approximate distribution passing only one of the GOF tests, | | | |
| it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |
| | | | |
| **Isopropylbenzene_1** | | | |
| | | | |
| **General Statistics** | | | |
| Total Number of Observations | 8 | Number of Distinct Observations | 8 |
| | | Number of Missing Observations | 208 |
| Minimum | 0.1 | Mean | 0.56 |
| Maximum | 1.7 | Median | 0.265 |
| SD | 0.599 | Std. Error of Mean | 0.212 |
| Coefficient of Variation | 1.07 | Skewness | 1.256 |
| | | | |
| Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach, | | | |
| refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance, | | | |
| but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7). | | | |
| The Chebyshev UCL often results in gross overestimates of the mean. | | | |
| Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL. | | | |
| | | | |
| **Normal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.805 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk Critical Value | 0.749 | Data appear Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.256 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.333 | Data appear Normal at 1% Significance Level | |
| Data appear Normal at 1% Significance Level | | | |

| | | | |
|---|---|---|---|
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Assuming Normal Distribution** | | | |
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 0.961 | 95% Adjusted-CLT UCL (Chen-1995) | 1.009 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.977 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.499 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.734 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.253 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.301 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 1.072 | k star (bias corrected MLE) | 0.753 |
| Theta hat (MLE) | 0.523 | Theta star (bias corrected MLE) | 0.744 |
| nu hat (MLE) | 17.15 | nu star (bias corrected) | 12.05 |
| MLE Mean (bias corrected) | 0.56 | MLE Sd (bias corrected) | 0.645 |
| | | Approximate Chi Square Value (0.05) | 5.26 |
| Adjusted Level of Significance | 0.0195 | Adjusted Chi Square Value | 4.183 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 1.283 | 95% Adjusted Gamma UCL | 1.613 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.893 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.851 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.222 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.265 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -2.303 | Mean of logged Data | -1.114 |
| Maximum of Logged Data | 0.531 | SD of logged Data | 1.117 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 2.945 | 90% Chebyshev (MVUE) UCL | 1.215 |
| 95% Chebyshev (MVUE) UCL | 1.517 | 97.5% Chebyshev (MVUE) UCL | 1.935 |
| 99% Chebyshev (MVUE) UCL | 2.756 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.908 | 95% BCA Bootstrap UCL | 1.001 |

| | | | |
|---|---|---|---|
| 95% Standard Bootstrap UCL | 0.891 | 95% Bootstrap-t UCL | 1.431 |
| 95% Hall's Bootstrap UCL | 1.214 | 95% Percentile Bootstrap UCL | 0.914 |
| 90% Chebyshev(Mean, Sd) UCL | 1.195 | 95% Chebyshev(Mean, Sd) UCL | 1.483 |
| 97.5% Chebyshev(Mean, Sd) UCL | 1.883 | 99% Chebyshev(Mean, Sd) UCL | 2.667 |

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% Student's-t UCL | 0.961 | | |

**The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.**

**Please verify the data were collected from random locations.**

**If the data were collected using judgmental or other non-random methods,**

**then contact a statistician to correctly calculate UCLs.**

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Isopropylbenzene_2**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 6 | Number of Distinct Observations | 6 |
| | | Number of Missing Observations | 210 |
| Minimum | 0.1 | Mean | 0.263 |
| Maximum | 0.7 | Median | 0.155 |
| SD | 0.234 | Std. Error of Mean | 0.0956 |
| Coefficient of Variation | 0.889 | Skewness | 1.718 |

**Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,**

**refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,**

**but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).**

**The Chebyshev UCL often results in gross overestimates of the mean.**

**Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.**

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.767 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.713 | Data appear Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.322 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.373 | Data appear Normal at 1% Significance Level |

**Data appear Normal at 1% Significance Level**

**Note GOF tests may be unreliable for small sample sizes**

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.456 | 95% Adjusted-CLT UCL (Chen-1995) | 0.492 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.467 |

**Gamma GOF Test**

| | | | |
|---|---|---|---|
| A-D Test Statistic | 0.524 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.704 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.297 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.336 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 2.002 | k star (bias corrected MLE) | 1.112 |
| Theta hat (MLE) | 0.132 | Theta star (bias corrected MLE) | 0.237 |
| nu hat (MLE) | 24.03 | nu star (bias corrected) | 13.35 |
| MLE Mean (bias corrected) | 0.263 | MLE Sd (bias corrected) | 0.25 |
| | | Approximate Chi Square Value (0.05) | 6.127 |
| Adjusted Level of Significance | 0.0122 | Adjusted Chi Square Value | 4.481 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 0.574 | 95% Adjusted Gamma UCL | 0.784 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.882 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.826 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.254 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.298 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -2.303 | Mean of logged Data | -1.604 |
| Maximum of Logged Data | -0.357 | SD of logged Data | 0.762 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 0.845 | 90% Chebyshev (MVUE) UCL | 0.49 |
| 95% Chebyshev (MVUE) UCL | 0.597 | 97.5% Chebyshev (MVUE) UCL | 0.745 |
| 99% Chebyshev (MVUE) UCL | 1.036 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.421 | 95% BCA Bootstrap UCL | 0.457 |
| 95% Standard Bootstrap UCL | 0.407 | 95% Bootstrap-t UCL | 1.399 |
| 95% Hall's Bootstrap UCL | 1.384 | 95% Percentile Bootstrap UCL | 0.413 |
| 90% Chebyshev(Mean, Sd) UCL | 0.55 | 95% Chebyshev(Mean, Sd) UCL | 0.68 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.86 | 99% Chebyshev(Mean, Sd) UCL | 1.214 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 0.456 | | |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Isopropylbenzene_3**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 1 | Number of Distinct Observations | 1 |
| | | Number of Missing Observations | 215 |
| Minimum | 0.14 | Mean | 0.14 |
| Maximum | 0.14 | Median | 0.14 |

Warning: This data set only has 1 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Isopropylbenzene_3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

**m,p-Xylenes**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 23 | Number of Distinct Observations | 21 |
| | | Number of Missing Observations | 193 |
| Minimum | 0.0022 | Mean | 0.166 |
| Maximum | 1.7 | Median | 0.0096 |
| SD | 0.405 | Std. Error of Mean | 0.0845 |
| Coefficient of Variation | 2.441 | Skewness | 3.052 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.472 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.881 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.436 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.209 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.311 | 95% Adjusted-CLT UCL (Chen-1995) | 0.362 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.32 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 3.077 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.846 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.342 | **Kolmogorov-Smirnov Gamma GOF Test** |

| | | | |
|---|---|---|---|
| 5% K-S Critical Value | 0.197 | Data Not Gamma Distributed at 5% Significance Level | |
| Data Not Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 0.311 | k star (bias corrected MLE) | 0.3 |
| Theta hat (MLE) | 0.533 | Theta star (bias corrected MLE) | 0.554 |
| nu hat (MLE) | 14.33 | nu star (bias corrected) | 13.79 |
| MLE Mean (bias corrected) | 0.166 | MLE Sd (bias corrected) | 0.303 |
| | | Approximate Chi Square Value (0.05) | 6.429 |
| Adjusted Level of Significance | 0.0389 | Adjusted Chi Square Value | 6.067 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 0.356 | 95% Adjusted Gamma UCL | 0.377 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.841 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.928 | Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.197 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.165 | Data Not Lognormal at 10% Significance Level | |
| Data Not Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -6.119 | Mean of logged Data | -3.996 |
| Maximum of Logged Data | 0.531 | SD of logged Data | 1.941 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 0.621 | 90% Chebyshev (MVUE) UCL | 0.252 |
| 95% Chebyshev (MVUE) UCL | 0.322 | 97.5% Chebyshev (MVUE) UCL | 0.418 |
| 99% Chebyshev (MVUE) UCL | 0.607 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data do not follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.305 | 95% BCA Bootstrap UCL | 0.378 |
| 95% Standard Bootstrap UCL | 0.302 | 95% Bootstrap-t UCL | 0.555 |
| 95% Hall's Bootstrap UCL | 0.456 | 95% Percentile Bootstrap UCL | 0.318 |
| 90% Chebyshev(Mean, Sd) UCL | 0.419 | 95% Chebyshev(Mean, Sd) UCL | 0.534 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.693 | 99% Chebyshev(Mean, Sd) UCL | 1.006 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 0.311 | | |
| | | | |
| The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner. | | | |
| Please verify the data were collected from random locations. | | | |
| If the data were collected using judgmental or other non-random methods, | | | |
| then contact a statistician to correctly calculate UCLs. | | | |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**m,p-Xylenes_1**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 19 | Number of Distinct Observations | 17 |
| | | Number of Missing Observations | 197 |
| Minimum | 0.0022 | Mean | 0.0125 |
| Maximum | 0.053 | Median | 0.0066 |
| SD | 0.0127 | Std. Error of Mean | 0.0029 |
| Coefficient of Variation | 1.013 | Skewness | 2.062 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.759 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.863 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.222 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.229 | Data appear Normal at 1% Significance Level |

**Data appear Approximate Normal at 1% Significance Level**

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0175 | 95% Adjusted-CLT UCL (Chen-1995) | 0.0187 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.0178 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.59 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.759 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.177 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.202 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 1.403 | k star (bias corrected MLE) | 1.217 |
| Theta hat (MLE) | 0.0089 | Theta star (bias corrected MLE) | 0.0103 |
| nu hat (MLE) | 53.33 | nu star (bias corrected) | 46.24 |
| MLE Mean (bias corrected) | 0.0125 | MLE Sd (bias corrected) | 0.0113 |
| | | Approximate Chi Square Value (0.05) | 31.64 |
| Adjusted Level of Significance | 0.0369 | Adjusted Chi Square Value | 30.58 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 0.0183 | 95% Adjusted Gamma UCL | 0.0189 |

**Lognormal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.958 | **Shapiro Wilk Lognormal GOF Test** |
| 10% Shapiro Wilk Critical Value | 0.917 | Data appear Lognormal at 10% Significance Level |

| | | | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.133 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.18 | Data appear Lognormal at 10% Significance Level | |
| **Data appear Lognormal at 10% Significance Level** | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -6.119 | Mean of logged Data | -4.78 |
| Maximum of Logged Data | -2.937 | SD of logged Data | 0.898 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 0.0212 | 90% Chebyshev (MVUE) UCL | 0.0205 |
| 95% Chebyshev (MVUE) UCL | 0.0242 | 97.5% Chebyshev (MVUE) UCL | 0.0295 |
| 99% Chebyshev (MVUE) UCL | 0.0397 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| **Data appear to follow a Discernible Distribution** | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.0173 | 95% BCA Bootstrap UCL | 0.0196 |
| 95% Standard Bootstrap UCL | 0.0171 | 95% Bootstrap-t UCL | 0.0203 |
| 95% Hall's Bootstrap UCL | 0.0229 | 95% Percentile Bootstrap UCL | 0.0175 |
| 90% Chebyshev(Mean, Sd) UCL | 0.0212 | 95% Chebyshev(Mean, Sd) UCL | 0.0251 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.0306 | 99% Chebyshev(Mean, Sd) UCL | 0.0414 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 0.0175 | | |
| | | | |
| **The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.** | | | |
| **Please verify the data were collected from random locations.** | | | |
| **If the data were collected using judgmental or other non-random methods,** | | | |
| **then contact a statistician to correctly calculate UCLs.** | | | |
| | | | |
| When a data set follows an approximate distribution passing only one of the GOF tests, | | | |
| it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |
| | | | |
| **Naphthalene** | | | |
| | | | |
| **General Statistics** | | | |
| Total Number of Observations | 13 | Number of Distinct Observations | 12 |
| | | Number of Missing Observations | 203 |
| Minimum | 0.011 | Mean | 0.303 |
| Maximum | 1.7 | Median | 0.069 |
| SD | 0.485 | Std. Error of Mean | 0.135 |
| Coefficient of Variation | 1.602 | Skewness | 2.307 |

| Normal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.663 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk Critical Value | 0.814 | Data Not Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.293 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.271 | Data Not Normal at 1% Significance Level | |
| Data Not Normal at 1% Significance Level | | | |

| Assuming Normal Distribution | | | |
|---|---|---|---|
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 0.543 | 95% Adjusted-CLT UCL (Chen-1995) | 0.616 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.557 |

| Gamma GOF Test | | | |
|---|---|---|---|
| A-D Test Statistic | 0.728 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.788 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.235 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.249 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |

| Gamma Statistics | | | |
|---|---|---|---|
| k hat (MLE) | 0.522 | k star (bias corrected MLE) | 0.453 |
| Theta hat (MLE) | 0.58 | Theta star (bias corrected MLE) | 0.669 |
| nu hat (MLE) | 13.57 | nu star (bias corrected) | 11.77 |
| MLE Mean (bias corrected) | 0.303 | MLE Sd (bias corrected) | 0.45 |
| | | Approximate Chi Square Value (0.05) | 5.077 |
| Adjusted Level of Significance | 0.0301 | Adjusted Chi Square Value | 4.466 |

| Assuming Gamma Distribution | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 0.702 | 95% Adjusted Gamma UCL | 0.798 |

| Lognormal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.917 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.889 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.17 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.215 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |

| Lognormal Statistics | | | |
|---|---|---|---|
| Minimum of Logged Data | -4.51 | Mean of logged Data | -2.404 |
| Maximum of Logged Data | 0.531 | SD of logged Data | 1.678 |

| Assuming Lognormal Distribution | | | |
|---|---|---|---|
| 95% H-UCL | 2.7 | 90% Chebyshev (MVUE) UCL | 0.767 |
| 95% Chebyshev (MVUE) UCL | 0.979 | 97.5% Chebyshev (MVUE) UCL | 1.272 |
| 99% Chebyshev (MVUE) UCL | 1.849 | | |

| Nonparametric Distribution Free UCL Statistics |
|---|

Data appear to follow a Discernible Distribution

**Nonparametric Distribution Free UCLs**

| | | | |
|---|---|---|---|
| 95% CLT UCL | 0.524 | 95% BCA Bootstrap UCL | 0.629 |
| 95% Standard Bootstrap UCL | 0.522 | 95% Bootstrap-t UCL | 0.806 |
| 95% Hall's Bootstrap UCL | 1.182 | 95% Percentile Bootstrap UCL | 0.549 |
| 90% Chebyshev(Mean, Sd) UCL | 0.706 | 95% Chebyshev(Mean, Sd) UCL | 0.889 |
| 97.5% Chebyshev(Mean, Sd) UCL | 1.143 | 99% Chebyshev(Mean, Sd) UCL | 1.642 |

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% Adjusted Gamma UCL | 0.798 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Naphthalene_1**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 9 | Number of Distinct Observations | 8 |
| | | Number of Missing Observations | 207 |
| Minimum | 0.011 | Mean | 0.054 |
| Maximum | 0.2 | Median | 0.024 |
| SD | 0.0599 | Std. Error of Mean | 0.02 |
| Coefficient of Variation | 1.11 | Skewness | 2.16 |

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,

refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,

but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).

The Chebyshev UCL often results in gross overestimates of the mean.

Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.722 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.764 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.247 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.316 | Data appear Normal at 1% Significance Level |

Data appear Approximate Normal at 1% Significance Level

Note GOF tests may be unreliable for small sample sizes

**Assuming Normal Distribution**

| | |
|---|---|
| **95% Normal UCL** | **95% UCLs (Adjusted for Skewness)** |

| | | | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0911 | 95% Adjusted-CLT UCL (Chen-1995) | 0.102 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.0935 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.513 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.738 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.252 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.285 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 1.323 | k star (bias corrected MLE) | 0.956 |
| Theta hat (MLE) | 0.0408 | Theta star (bias corrected MLE) | 0.0565 |
| nu hat (MLE) | 23.82 | nu star (bias corrected) | 17.21 |
| MLE Mean (bias corrected) | 0.054 | MLE Sd (bias corrected) | 0.0552 |
| | | Approximate Chi Square Value (0.05) | 8.825 |
| Adjusted Level of Significance | 0.0231 | Adjusted Chi Square Value | 7.592 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 0.105 | 95% Adjusted Gamma UCL | 0.122 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.934 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.859 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.217 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.252 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -4.51 | Mean of logged Data | -3.342 |
| Maximum of Logged Data | -1.609 | SD of logged Data | 0.933 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 0.152 | 90% Chebyshev (MVUE) UCL | 0.101 |
| 95% Chebyshev (MVUE) UCL | 0.123 | 97.5% Chebyshev (MVUE) UCL | 0.155 |
| 99% Chebyshev (MVUE) UCL | 0.216 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.0869 | 95% BCA Bootstrap UCL | 0.108 |
| 95% Standard Bootstrap UCL | 0.0856 | 95% Bootstrap-t UCL | 0.139 |
| 95% Hall's Bootstrap UCL | 0.203 | 95% Percentile Bootstrap UCL | 0.0886 |
| 90% Chebyshev(Mean, Sd) UCL | 0.114 | 95% Chebyshev(Mean, Sd) UCL | 0.141 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.179 | 99% Chebyshev(Mean, Sd) UCL | 0.253 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0911 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

When a data set follows an approximate distribution passing only one of the GOF tests,

it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**o-Xylene**

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 24 | Number of Distinct Observations | 23 |
| | | Number of Missing Observations | 192 |
| Minimum | 0.0011 | Mean | 0.0583 |
| Maximum | 0.37 | Median | 0.00745 |
| SD | 0.107 | Std. Error of Mean | 0.0218 |
| Coefficient of Variation | 1.832 | Skewness | 1.991 |

| Normal GOF Test | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.59 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.884 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.407 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.205 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

| Assuming Normal Distribution | | | |
|---|---|---|---|
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 0.0956 | 95% Adjusted-CLT UCL (Chen-1995) | 0.104 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.0971 |

| Gamma GOF Test | | |
|---|---|---|
| A-D Test Statistic | 2.134 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.825 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.26 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.19 | Data Not Gamma Distributed at 5% Significance Level |

Data Not Gamma Distributed at 5% Significance Level

| Gamma Statistics | | | |
|---|---|---|---|
| k hat (MLE) | 0.417 | k star (bias corrected MLE) | 0.392 |

| | | | |
|---|---|---|---|
| Theta hat (MLE) | 0.14 | Theta star (bias corrected MLE) | 0.149 |
| nu hat (MLE) | 19.99 | nu star (bias corrected) | 18.83 |
| MLE Mean (bias corrected) | 0.0583 | MLE Sd (bias corrected) | 0.0931 |
| | | Approximate Chi Square Value (0.05) | 9.992 |
| Adjusted Level of Significance | 0.0392 | Adjusted Chi Square Value | 9.54 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 0.11 | 95% Adjusted Gamma UCL | 0.115 |

**Lognormal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.899 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.93 | Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.155 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.162 | Data appear Lognormal at 10% Significance Level | |

Data appear Approximate Lognormal at 10% Significance Level

**Lognormal Statistics**

| | | | |
|---|---|---|---|
| Minimum of Logged Data | -6.812 | Mean of logged Data | -4.412 |
| Maximum of Logged Data | -0.994 | SD of logged Data | 1.77 |

**Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| 95% H-UCL | 0.228 | 90% Chebyshev (MVUE) UCL | 0.119 |
| 95% Chebyshev (MVUE) UCL | 0.15 | 97.5% Chebyshev (MVUE) UCL | 0.194 |
| 99% Chebyshev (MVUE) UCL | 0.279 | | |

**Nonparametric Distribution Free UCL Statistics**

Data appear to follow a Discernible Distribution

**Nonparametric Distribution Free UCLs**

| | | | |
|---|---|---|---|
| 95% CLT UCL | 0.0941 | 95% BCA Bootstrap UCL | 0.105 |
| 95% Standard Bootstrap UCL | 0.0935 | 95% Bootstrap-t UCL | 0.116 |
| 95% Hall's Bootstrap UCL | 0.0941 | 95% Percentile Bootstrap UCL | 0.0968 |
| 90% Chebyshev(Mean, Sd) UCL | 0.124 | 95% Chebyshev(Mean, Sd) UCL | 0.153 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.194 | 99% Chebyshev(Mean, Sd) UCL | 0.275 |

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0956 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

o-Xylene_1

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 23 | Number of Distinct Observations | 22 |
| | | Number of Missing Observations | 193 |
| Minimum | 0.0011 | Mean | 0.0447 |
| Maximum | 0.3 | Median | 0.0074 |
| SD | 0.0855 | Std. Error of Mean | 0.0178 |
| Coefficient of Variation | 1.911 | Skewness | 2.183 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.558 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.881 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.408 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.209 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

**Assuming Normal Distribution**

| | | | |
|---|---|---|---|
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 0.0754 | 95% Adjusted-CLT UCL (Chen-1995) | 0.0827 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.0767 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 2.12 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.817 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.254 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.193 | Data Not Gamma Distributed at 5% Significance Level |

Data Not Gamma Distributed at 5% Significance Level

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.445 | k star (bias corrected MLE) | 0.416 |
| Theta hat (MLE) | 0.101 | Theta star (bias corrected MLE) | 0.108 |
| nu hat (MLE) | 20.47 | nu star (bias corrected) | 19.14 |
| MLE Mean (bias corrected) | 0.0447 | MLE Sd (bias corrected) | 0.0694 |
| | | Approximate Chi Square Value (0.05) | 10.22 |
| Adjusted Level of Significance | 0.0389 | Adjusted Chi Square Value | 9.745 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 0.0838 | 95% Adjusted Gamma UCL | 0.0879 |

**Lognormal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.905 | **Shapiro Wilk Lognormal GOF Test** |
| 10% Shapiro Wilk Critical Value | 0.928 | Data Not Lognormal at 10% Significance Level |
| Lilliefors Test Statistic | 0.15 | **Lilliefors Lognormal GOF Test** |
| 10% Lilliefors Critical Value | 0.165 | Data appear Lognormal at 10% Significance Level |

Data appear Approximate Lognormal at 10% Significance Level

**Lognormal Statistics**

| | | | |
|---|---|---|---|
| Minimum of Logged Data | -6.812 | Mean of logged Data | -4.56 |
| Maximum of Logged Data | -1.204 | SD of logged Data | 1.65 |

**Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| 95% H-UCL | 0.139 | 90% Chebyshev (MVUE) UCL | 0.0823 |
| 95% Chebyshev (MVUE) UCL | 0.103 | 97.5% Chebyshev (MVUE) UCL | 0.132 |
| 99% Chebyshev (MVUE) UCL | 0.189 | | |

**Nonparametric Distribution Free UCL Statistics**

Data appear to follow a Discernible Distribution

**Nonparametric Distribution Free UCLs**

| | | | |
|---|---|---|---|
| 95% CLT UCL | 0.0741 | 95% BCA Bootstrap UCL | 0.0811 |
| 95% Standard Bootstrap UCL | 0.0729 | 95% Bootstrap-t UCL | 0.0933 |
| 95% Hall's Bootstrap UCL | 0.0736 | 95% Percentile Bootstrap UCL | 0.0749 |
| 90% Chebyshev(Mean, Sd) UCL | 0.0982 | 95% Chebyshev(Mean, Sd) UCL | 0.122 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.156 | 99% Chebyshev(Mean, Sd) UCL | 0.222 |

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0754 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**o-Xylene_2**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 21 | Number of Distinct Observations | 20 |
| | | Number of Missing Observations | 195 |
| Minimum | 0.0011 | Mean | 0.0233 |
| Maximum | 0.2 | Median | 0.0064 |
| SD | 0.0489 | Std. Error of Mean | 0.0107 |
| Coefficient of Variation | 2.102 | Skewness | 3.125 |

**Normal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.473 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk Critical Value | 0.873 | Data Not Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.376 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.219 | Data Not Normal at 1% Significance Level | |

Data Not Normal at 1% Significance Level

| Assuming Normal Distribution | | | |
|---|---|---|---|
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 0.0417 | 95% Adjusted-CLT UCL (Chen-1995) | 0.0486 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.0429 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 1.764 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.8 | Data Not Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.23 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.2 | Data Not Gamma Distributed at 5% Significance Level | |
| Data Not Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 0.562 | k star (bias corrected MLE) | 0.514 |
| Theta hat (MLE) | 0.0414 | Theta star (bias corrected MLE) | 0.0453 |
| nu hat (MLE) | 23.62 | nu star (bias corrected) | 21.58 |
| MLE Mean (bias corrected) | 0.0233 | MLE Sd (bias corrected) | 0.0325 |
| | | Approximate Chi Square Value (0.05) | 12.02 |
| Adjusted Level of Significance | 0.0383 | Adjusted Chi Square Value | 11.47 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 0.0418 | 95% Adjusted Gamma UCL | 0.0438 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.931 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.923 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.127 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.173 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -6.812 | Mean of logged Data | -4.869 |
| Maximum of Logged Data | -1.609 | SD of logged Data | 1.356 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 0.0491 | 90% Chebyshev (MVUE) UCL | 0.0366 |
| 95% Chebyshev (MVUE) UCL | 0.0451 | 97.5% Chebyshev (MVUE) UCL | 0.0569 |
| 99% Chebyshev (MVUE) UCL | 0.0801 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.0409 | 95% BCA Bootstrap UCL | 0.0495 |
| 95% Standard Bootstrap UCL | 0.0404 | 95% Bootstrap-t UCL | 0.133 |
| 95% Hall's Bootstrap UCL | 0.129 | 95% Percentile Bootstrap UCL | 0.0423 |
| 90% Chebyshev(Mean, Sd) UCL | 0.0553 | 95% Chebyshev(Mean, Sd) UCL | 0.0698 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.09 | 99% Chebyshev(Mean, Sd) UCL | 0.13 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% H-UCL | 0.0491 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**2-Methylnaphthalene**

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 14 | Number of Distinct Observations | 14 |
| | | Number of Missing Observations | 202 |
| Minimum | 0.0035 | Mean | 0.164 |
| Maximum | 0.89 | Median | 0.049 |
| SD | 0.256 | Std. Error of Mean | 0.0685 |
| Coefficient of Variation | 1.56 | Skewness | 2.15 |

| Normal GOF Test | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.686 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.825 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.278 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.263 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

| Assuming Normal Distribution | | | |
|---|---|---|---|
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 0.286 | 95% Adjusted-CLT UCL (Chen-1995) | 0.319 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.292 |

| Gamma GOF Test | | |
|---|---|---|
| A-D Test Statistic | 0.456 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.794 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.153 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.242 | Detected data appear Gamma Distributed at 5% Significance Level |

Detected data appear Gamma Distributed at 5% Significance Level

| Gamma Statistics | | | |
|---|---|---|---|
| k hat (MLE) | 0.495 | k star (bias corrected MLE) | 0.436 |
| Theta hat (MLE) | 0.332 | Theta star (bias corrected MLE) | 0.376 |
| nu hat (MLE) | 13.85 | nu star (bias corrected) | 12.22 |
| MLE Mean (bias corrected) | 0.164 | MLE Sd (bias corrected) | 0.249 |

| | | | |
|---|---|---|---|
| | | Approximate Chi Square Value (0.05) | 5.369 |
| Adjusted Level of Significance | 0.0312 | Adjusted Chi Square Value | 4.78 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 0.374 | 95% Adjusted Gamma UCL | 0.42 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.948 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.895 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.138 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.208 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -5.655 | Mean of logged Data | -3.093 |
| Maximum of Logged Data | -0.117 | SD of logged Data | 1.831 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 2.193 | 90% Chebyshev (MVUE) UCL | 0.503 |
| 95% Chebyshev (MVUE) UCL | 0.645 | 97.5% Chebyshev (MVUE) UCL | 0.842 |
| 99% Chebyshev (MVUE) UCL | 1.23 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.277 | 95% BCA Bootstrap UCL | 0.333 |
| 95% Standard Bootstrap UCL | 0.274 | 95% Bootstrap-t UCL | 0.444 |
| 95% Hall's Bootstrap UCL | 0.731 | 95% Percentile Bootstrap UCL | 0.284 |
| 90% Chebyshev(Mean, Sd) UCL | 0.37 | 95% Chebyshev(Mean, Sd) UCL | 0.463 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.592 | 99% Chebyshev(Mean, Sd) UCL | 0.846 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Adjusted Gamma UCL | 0.42 | | |
| | | | |
| The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner. | | | |
| Please verify the data were collected from random locations. | | | |
| If the data were collected using judgmental or other non-random methods, | | | |
| then contact a statistician to correctly calculate UCLs. | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |
| | | | |
| **2-Methylnaphthalene_1** | | | |
| | | | |
| **General Statistics** | | | |

| | | | |
|---|---|---|---|
| Total Number of Observations | 13 | Number of Distinct Observations | 13 |
| | | Number of Missing Observations | 203 |
| Minimum | 0.0035 | Mean | 0.156 |
| Maximum | 0.89 | Median | 0.048 |
| SD | 0.265 | Std. Error of Mean | 0.0734 |
| Coefficient of Variation | 1.697 | Skewness | 2.241 |
| | | | |
| **Normal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.645 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk Critical Value | 0.814 | Data Not Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.311 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.271 | Data Not Normal at 1% Significance Level | |
| Data Not Normal at 1% Significance Level | | | |
| | | | |
| **Assuming Normal Distribution** | | | |
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 0.287 | 95% Adjusted-CLT UCL (Chen-1995) | 0.326 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.295 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.565 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.796 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.172 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.251 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 0.468 | k star (bias corrected MLE) | 0.411 |
| Theta hat (MLE) | 0.334 | Theta star (bias corrected MLE) | 0.38 |
| nu hat (MLE) | 12.16 | nu star (bias corrected) | 10.69 |
| MLE Mean (bias corrected) | 0.156 | MLE Sd (bias corrected) | 0.243 |
| | | Approximate Chi Square Value (0.05) | 4.375 |
| Adjusted Level of Significance | 0.0301 | Adjusted Chi Square Value | 3.816 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 0.381 | 95% Adjusted Gamma UCL | 0.437 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.949 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.889 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.143 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.215 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -5.655 | Mean of logged Data | -3.23 |
| Maximum of Logged Data | -0.117 | SD of logged Data | 1.829 |

| Assuming Lognormal Distribution | | | |
|---|---|---|---|
| 95% H-UCL | 2.149 | 90% Chebyshev (MVUE) UCL | 0.435 |
| 95% Chebyshev (MVUE) UCL | 0.559 | 97.5% Chebyshev (MVUE) UCL | 0.732 |
| 99% Chebyshev (MVUE) UCL | 1.07 | | |

| Nonparametric Distribution Free UCL Statistics |
|---|
| Data appear to follow a Discernible Distribution |

| Nonparametric Distribution Free UCLs | | | |
|---|---|---|---|
| 95% CLT UCL | 0.277 | 95% BCA Bootstrap UCL | 0.318 |
| 95% Standard Bootstrap UCL | 0.273 | 95% Bootstrap-t UCL | 0.565 |
| 95% Hall's Bootstrap UCL | 0.746 | 95% Percentile Bootstrap UCL | 0.28 |
| 90% Chebyshev(Mean, Sd) UCL | 0.376 | 95% Chebyshev(Mean, Sd) UCL | 0.476 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.615 | 99% Chebyshev(Mean, Sd) UCL | 0.887 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% Adjusted Gamma UCL | 0.437 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.
Please verify the data were collected from random locations.
If the data were collected using judgmental or other non-random methods,
then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**2-Methylnaphthalene_2**

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 10 | Number of Distinct Observations | 10 |
| | | Number of Missing Observations | 206 |
| Minimum | 0.0035 | Mean | 0.0359 |
| Maximum | 0.13 | Median | 0.0155 |
| SD | 0.0412 | Std. Error of Mean | 0.013 |
| Coefficient of Variation | 1.147 | Skewness | 1.536 |

| Normal GOF Test | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.8 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.781 | Data appear Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.25 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.304 | Data appear Normal at 1% Significance Level |
| Data appear Normal at 1% Significance Level | | |

| Assuming Normal Distribution | | | |
|---|---|---|---|
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 0.0598 | 95% Adjusted-CLT UCL (Chen-1995) | 0.0641 |

| | | | |
|---|---|---|---|
| | | 95% Modified-t UCL (Johnson-1978) | 0.0608 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.392 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.752 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.21 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.275 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 0.887 | k star (bias corrected MLE) | 0.687 |
| Theta hat (MLE) | 0.0405 | Theta star (bias corrected MLE) | 0.0522 |
| nu hat (MLE) | 17.73 | nu star (bias corrected) | 13.75 |
| MLE Mean (bias corrected) | 0.0359 | MLE Sd (bias corrected) | 0.0433 |
| | | Approximate Chi Square Value (0.05) | 6.399 |
| Adjusted Level of Significance | 0.0267 | Adjusted Chi Square Value | 5.551 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 0.0772 | 95% Adjusted Gamma UCL | 0.0889 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.937 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.869 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.173 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.241 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -5.655 | Mean of logged Data | -3.987 |
| Maximum of Logged Data | -2.04 | SD of logged Data | 1.271 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 0.199 | 90% Chebyshev (MVUE) UCL | 0.0837 |
| 95% Chebyshev (MVUE) UCL | 0.105 | 97.5% Chebyshev (MVUE) UCL | 0.134 |
| 99% Chebyshev (MVUE) UCL | 0.192 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.0573 | 95% BCA Bootstrap UCL | 0.064 |
| 95% Standard Bootstrap UCL | 0.0562 | 95% Bootstrap-t UCL | 0.0781 |
| 95% Hall's Bootstrap UCL | 0.0806 | 95% Percentile Bootstrap UCL | 0.0579 |
| 90% Chebyshev(Mean, Sd) UCL | 0.075 | 95% Chebyshev(Mean, Sd) UCL | 0.0927 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.117 | 99% Chebyshev(Mean, Sd) UCL | 0.166 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 0.0598 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Anthracene**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 1 | Number of Distinct Observations | 1 |
| | | Number of Missing Observations | 215 |
| Minimum | 0.0021 | Mean | 0.0021 |
| Maximum | 0.0021 | Median | 0.0021 |

Warning: This data set only has 1 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Anthracene was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

**NaphthaleneTotal**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 18 | Number of Distinct Observations | 18 |
| | | Number of Missing Observations | 198 |
| Minimum | 0.0023 | Mean | 0.353 |
| Maximum | 2.69 | Median | 0.0565 |
| SD | 0.731 | Std. Error of Mean | 0.172 |
| Coefficient of Variation | 2.073 | Skewness | 2.688 |

**Normal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.536 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk Critical Value | 0.858 | Data Not Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.323 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.235 | Data Not Normal at 1% Significance Level | |

Data Not Normal at 1% Significance Level

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.652 | 95% Adjusted-CLT UCL (Chen-1995) | 0.753 |

| | | | |
|---|---|---|---|
| | | 95% Modified-t UCL (Johnson-1978) | 0.67 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.798 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.83 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.213 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.219 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 0.358 | k star (bias corrected MLE) | 0.335 |
| Theta hat (MLE) | 0.984 | Theta star (bias corrected MLE) | 1.051 |
| nu hat (MLE) | 12.89 | nu star (bias corrected) | 12.08 |
| MLE Mean (bias corrected) | 0.353 | MLE Sd (bias corrected) | 0.609 |
| | | Approximate Chi Square Value (0.05) | 5.278 |
| Adjusted Level of Significance | 0.0357 | Adjusted Chi Square Value | 4.852 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 0.807 | 95% Adjusted Gamma UCL | 0.878 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.961 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.914 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.102 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.185 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -6.075 | Mean of logged Data | -2.913 |
| Maximum of Logged Data | 0.99 | SD of logged Data | 2.163 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 6.332 | 90% Chebyshev (MVUE) UCL | 1.146 |
| 95% Chebyshev (MVUE) UCL | 1.483 | 97.5% Chebyshev (MVUE) UCL | 1.95 |
| 99% Chebyshev (MVUE) UCL | 2.867 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.636 | 95% BCA Bootstrap UCL | 0.758 |
| 95% Standard Bootstrap UCL | 0.631 | 95% Bootstrap-t UCL | 1.582 |
| 95% Hall's Bootstrap UCL | 1.955 | 95% Percentile Bootstrap UCL | 0.651 |
| 90% Chebyshev(Mean, Sd) UCL | 0.869 | 95% Chebyshev(Mean, Sd) UCL | 1.103 |
| 97.5% Chebyshev(Mean, Sd) UCL | 1.428 | 99% Chebyshev(Mean, Sd) UCL | 2.066 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Adjusted Gamma UCL | 0.878 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**NaphthaleneTotal_1**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 14 | Number of Distinct Observations | 14 |
| | | Number of Missing Observations | 202 |
| Minimum | 0.0023 | Mean | 0.0597 |
| Maximum | 0.27 | Median | 0.0307 |
| SD | 0.0796 | Std. Error of Mean | 0.0213 |
| Coefficient of Variation | 1.334 | Skewness | 1.932 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.733 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.825 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.24 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.263 | Data appear Normal at 1% Significance Level |

**Data appear Approximate Normal at 1% Significance Level**

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0974 | 95% Adjusted-CLT UCL (Chen-1995) | 0.106 |
| | | 95% Modified-t UCL (Johnson-1978) | 0.0992 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.311 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.779 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.137 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.239 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.652 | k star (bias corrected MLE) | 0.56 |
| Theta hat (MLE) | 0.0916 | Theta star (bias corrected MLE) | 0.107 |
| nu hat (MLE) | 18.26 | nu star (bias corrected) | 15.68 |
| MLE Mean (bias corrected) | 0.0597 | MLE Sd (bias corrected) | 0.0798 |
| | | Approximate Chi Square Value (0.05) | 7.737 |
| Adjusted Level of Significance | 0.0312 | Adjusted Chi Square Value | 7.007 |

| Assuming Gamma Distribution | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 0.121 | 95% Adjusted Gamma UCL | 0.134 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.941 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.895 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.144 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.208 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | -6.075 | Mean of logged Data | -3.754 |
| Maximum of Logged Data | -1.309 | SD of logged Data | 1.581 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 0.441 | 90% Chebyshev (MVUE) UCL | 0.168 |
| 95% Chebyshev (MVUE) UCL | 0.213 | 97.5% Chebyshev (MVUE) UCL | 0.276 |
| 99% Chebyshev (MVUE) UCL | 0.398 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 0.0947 | 95% BCA Bootstrap UCL | 0.106 |
| 95% Standard Bootstrap UCL | 0.0937 | 95% Bootstrap-t UCL | 0.152 |
| 95% Hall's Bootstrap UCL | 0.282 | 95% Percentile Bootstrap UCL | 0.0946 |
| 90% Chebyshev(Mean, Sd) UCL | 0.124 | 95% Chebyshev(Mean, Sd) UCL | 0.152 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.193 | 99% Chebyshev(Mean, Sd) UCL | 0.271 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 0.0974 | | |
| | | | |
| **The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.** | | | |
| **Please verify the data were collected from random locations.** | | | |
| **If the data were collected using judgmental or other non-random methods,** | | | |
| **then contact a statistician to correctly calculate UCLs.** | | | |
| | | | |
| When a data set follows an approximate distribution passing only one of the GOF tests, | | | |
| it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |

## UCL Statistics for Data Sets with Non-Detects

## Kosmos - Arsenic and Mercury

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.2 10/13/2023 12:36:33 AM |
| From File | As_Hg_ProUCLInput.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Arsenic**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 95 | Number of Distinct Observations | 78 |
| Number of Detects | 94 | Number of Non-Detects | 1 |
| Number of Distinct Detects | 77 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 0.557 | Minimum Non-Detect | 0.5 |
| Maximum Detect | 11.1 | Maximum Non-Detect | 0.5 |
| Variance Detects | 1.726 | Percent Non-Detects | 1.053% |
| Mean Detects | 1.961 | SD Detects | 1.314 |
| Median Detects | 1.635 | CV Detects | 0.67 |
| Skewness Detects | 4.303 | Kurtosis Detects | 26.05 |
| Mean of Logged Detects | 0.547 | SD of Logged Detects | 0.467 |

**Normal GOF Test on Detects Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.654 | **Normal GOF Test on Detected Observations Only** |
| 1% Shapiro Wilk P Value | 0 | Detected Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.194 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.106 | Detected Data Not Normal at 1% Significance Level |

**Detected Data Not Normal at 1% Significance Level**

**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**

| | | | |
|---|---|---|---|
| KM Mean | 1.945 | KM Standard Error of Mean | 0.135 |
| 90KM SD | 1.308 | 95% KM (BCA) UCL | 2.214 |
| 95% KM (t) UCL | 2.17 | 95% KM (Percentile Bootstrap) UCL | 2.179 |
| 95% KM (z) UCL | 2.167 | 95% KM Bootstrap t UCL | 2.28 |
| 90% KM Chebyshev UCL | 2.35 | 95% KM Chebyshev UCL | 2.534 |
| 97.5% KM Chebyshev UCL | 2.788 | 99% KM Chebyshev UCL | 3.288 |

**Gamma GOF Tests on Detected Observations Only**

| | | |
|---|---|---|
| A-D Test Statistic | 2.201 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.756 | Detected Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.121 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.0926 | Detected Data Not Gamma Distributed at 5% Significance Level |

**Detected Data Not Gamma Distributed at 5% Significance Level**

**Gamma Statistics on Detected Data Only**

| | | | |
|---|---|---|---|
| k hat (MLE) | 4.123 | k star (bias corrected MLE) | 3.998 |
| Theta hat (MLE) | 0.476 | Theta star (bias corrected MLE) | 0.49 |
| nu hat (MLE) | 775.1 | nu star (bias corrected) | 751.7 |

| | | | |
|---|---|---|---|
| Mean (detects) | 1.961 | | |
| | | | |
| **Gamma ROS Statistics using Imputed Non-Detects** | | | |
| GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | |
| GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | |
| For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | |
| This is especially true when the sample size is small. | | | |
| For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | |
| Minimum | 0.01 | Mean | 1.94 |
| Maximum | 11.1 | Median | 1.62 |
| SD | 1.322 | CV | 0.681 |
| k hat (MLE) | 3.1 | k star (bias corrected MLE) | 3.009 |
| Theta hat (MLE) | 0.626 | Theta star (bias corrected MLE) | 0.645 |
| nu hat (MLE) | 589 | nu star (bias corrected) | 571.8 |
| Adjusted Level of Significance (β) | 0.0475 | | |
| Approximate Chi Square Value (571.78, α) | 517.3 | Adjusted Chi Square Value (571.78, β) | 516.5 |
| 95% Gamma Approximate UCL | 2.145 | 95% Gamma Adjusted UCL | 2.148 |
| | | | |
| **Estimates of Gamma Parameters using KM Estimates** | | | |
| Mean (KM) | 1.945 | SD (KM) | 1.308 |
| Variance (KM) | 1.712 | SE of Mean (KM) | 0.135 |
| k hat (KM) | 2.211 | k star (KM) | 2.148 |
| nu hat (KM) | 420.1 | nu star (KM) | 408.2 |
| theta hat (KM) | 0.88 | theta star (KM) | 0.906 |
| 80% gamma percentile (KM) | 2.888 | 90% gamma percentile (KM) | 3.721 |
| 95% gamma percentile (KM) | 4.512 | 99% gamma percentile (KM) | 6.259 |
| | | | |
| **Gamma Kaplan-Meier (KM) Statistics** | | | |
| Approximate Chi Square Value (408.20, α) | 362.4 | Adjusted Chi Square Value (408.20, β) | 361.7 |
| 95% KM Approximate Gamma UCL | 2.191 | 95% KM Adjusted Gamma UCL | 2.195 |
| | | | |
| **Lognormal GOF Test on Detected Observations Only** | | | |
| Shapiro Wilk Approximate Test Statistic | 0.964 | **Shapiro Wilk GOF Test** | |
| 10% Shapiro Wilk P Value | 0.0537 | Detected Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.0836 | **Lilliefors GOF Test** | |
| 10% Lilliefors Critical Value | 0.0838 | Detected Data appear Lognormal at 10% Significance Level | |
| Detected Data appear Approximate Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal ROS Statistics Using Imputed Non-Detects** | | | |
| Mean in Original Scale | 1.945 | Mean in Log Scale | 0.534 |
| SD in Original Scale | 1.315 | SD in Log Scale | 0.482 |
| 95% t UCL (assumes normality of ROS data) | 2.17 | 95% Percentile Bootstrap UCL | 2.176 |
| 95% BCA Bootstrap UCL | 2.233 | 95% Bootstrap t UCL | 2.267 |
| 95% H-UCL (Log ROS) | 2.099 | | |
| | | | |
| **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | |
| KM Mean (logged) | 0.534 | KM Geo Mean | 1.706 |
| KM SD (logged) | 0.479 | 95% Critical H Value (KM-Log) | 1.838 |
| KM Standard Error of Mean (logged) | 0.0494 | 95% H-UCL (KM -Log) | 2.095 |

| | | | |
|---|---|---|---|
| KM SD (logged) | 0.479 | 95% Critical H Value (KM-Log) | 1.838 |
| KM Standard Error of Mean (logged) | 0.0494 | | |

**DL/2 Statistics**

| DL/2 Normal | | DL/2 Log-Transformed | |
|---|---|---|---|
| Mean in Original Scale | 1.943 | Mean in Log Scale | 0.527 |
| SD in Original Scale | 1.318 | SD in Log Scale | 0.505 |
| 95% t UCL (Assumes normality) | 2.167 | 95% H-Stat UCL | 2.119 |

DL/2 is not a recommended method, provided for comparisons and historical reasons

**Nonparametric Distribution Free UCL Statistics**

Detected Data appear Approximate Lognormal Distributed at 10% Significance Level

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| KM H-UCL | 2.095 | | |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Mercury**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 95 | Number of Distinct Observations | 5 |
| Number of Detects | 3 | Number of Non-Detects | 92 |
| Number of Distinct Detects | 3 | Number of Distinct Non-Detects | 2 |
| Minimum Detect | 0.044 | Minimum Non-Detect | 0.1 |
| Maximum Detect | 0.25 | Maximum Non-Detect | 1 |
| Variance Detects | 0.0108 | Percent Non-Detects | 96.84% |
| Mean Detects | 0.155 | SD Detects | 0.104 |
| Median Detects | 0.17 | CV Detects | 0.671 |
| Skewness Detects | -0.65 | Kurtosis Detects | N/A |
| Mean of Logged Detects | -2.094 | SD of Logged Detects | 0.912 |

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

**Normal GOF Test on Detects Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.984 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk Critical Value | 0.753 | Detected Data appear Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.225 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.429 | Detected Data appear Normal at 1% Significance Level |

Detected Data appear Normal at 1% Significance Level

Note GOF tests may be unreliable for small sample sizes

**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**

| | | | |
|---|---|---|---|
| KM Mean | 0.048 | KM Standard Error of Mean | 0.00352 |
| 90KM SD | 0.0262 | 95% KM (BCA) UCL | N/A |

| | | | |
|---|---|---|---|
| 95% KM (t) UCL | 0.0539 | 95% KM (Percentile Bootstrap) UCL | N/A |
| 95% KM (z) UCL | 0.0538 | 95% KM Bootstrap t UCL | N/A |
| 90% KM Chebyshev UCL | 0.0586 | 95% KM Chebyshev UCL | 0.0634 |
| 97.5% KM Chebyshev UCL | 0.07 | 99% KM Chebyshev UCL | 0.083 |
| | | | |
| **Gamma GOF Tests on Detected Observations Only** | | | |
| A-D Test Statistic | 0.339 | **Anderson-Darling GOF Test** | |
| 5% A-D Critical Value | 0.636 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.309 | **Kolmogorov-Smirnov GOF** | |
| 5% K-S Critical Value | 0.435 | Detected data appear Gamma Distributed at 5% Significance Level | |
| **Detected Data Not Gamma Distributed at 5% Significance Level** | | | |
| | | | |
| **Gamma Statistics on Detected Data Only** | | | |
| k hat (MLE) | 2.351 | k star (bias corrected MLE) | N/A |
| Theta hat (MLE) | 0.0658 | Theta star (bias corrected MLE) | N/A |
| nu hat (MLE) | 14.11 | nu star (bias corrected) | N/A |
| Mean (detects) | 0.155 | | |
| | | | |
| **Gamma ROS Statistics using Imputed Non-Detects** | | | |
| GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | |
| GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | |
| For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | |
| This is especially true when the sample size is small. | | | |
| For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | |
| Minimum | 0.01 | Mean | 0.0534 |
| Maximum | 0.25 | Median | 0.0419 |
| SD | 0.0457 | CV | 0.856 |
| k hat (MLE) | 1.467 | k star (bias corrected MLE) | 1.427 |
| Theta hat (MLE) | 0.0364 | Theta star (bias corrected MLE) | 0.0374 |
| nu hat (MLE) | 278.6 | nu star (bias corrected) | 271.2 |
| Adjusted Level of Significance (β) | 0.0475 | | |
| Approximate Chi Square Value (271.17, α) | 234 | Adjusted Chi Square Value (271.17, β) | 233.5 |
| 95% Gamma Approximate UCL | 0.0619 | 95% Gamma Adjusted UCL | N/A |
| | | | |
| **Estimates of Gamma Parameters using KM Estimates** | | | |
| Mean (KM) | 0.048 | SD (KM) | 0.0262 |
| Variance (KM) | 6.8655E-4 | SE of Mean (KM) | 0.00352 |
| k hat (KM) | 3.356 | k star (KM) | 3.257 |
| nu hat (KM) | 637.6 | nu star (KM) | 618.8 |
| theta hat (KM) | 0.0143 | theta star (KM) | 0.0147 |
| 80% gamma percentile (KM) | 0.0678 | 90% gamma percentile (KM) | 0.0837 |
| 95% gamma percentile (KM) | 0.0984 | 99% gamma percentile (KM) | 0.13 |
| | | | |
| **Gamma Kaplan-Meier (KM) Statistics** | | | |
| Approximate Chi Square Value (618.82, α) | 562.1 | Adjusted Chi Square Value (618.82, β) | 561.3 |
| 95% KM Approximate Gamma UCL | 0.0528 | 95% KM Adjusted Gamma UCL | 0.0529 |
| | | | |
| **Lognormal GOF Test on Detected Observations Only** | | | |
| Shapiro Wilk Test Statistic | 0.907 | **Shapiro Wilk GOF Test** | |

| | | | |
|---|---|---|---|
| 10% Shapiro Wilk Critical Value | 0.789 | Detected Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.305 | **Lilliefors GOF Test** | |
| 10% Lilliefors Critical Value | 0.389 | Detected Data appear Lognormal at 10% Significance Level | |
| Detected Data appear Lognormal at 10% Significance Level | | | |
| Note GOF tests may be unreliable for small sample sizes | | | |
| | | | |
| **Lognormal ROS Statistics Using Imputed Non-Detects** | | | |
| Mean in Original Scale | 0.0545 | Mean in Log Scale | -3.113 |
| SD in Original Scale | 0.0384 | SD in Log Scale | 0.641 |
| 95% t UCL (assumes normality of ROS data) | 0.0611 | 95% Percentile Bootstrap UCL | 0.0613 |
| 95% BCA Bootstrap UCL | 0.0621 | 95% Bootstrap t UCL | 0.0623 |
| 95% H-UCL (Log ROS) | 0.0621 | | |
| | | | |
| **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | |
| KM Mean (logged) | -3.086 | KM Geo Mean | 0.0457 |
| KM SD (logged) | 0.239 | 95% Critical H Value (KM-Log) | 1.721 |
| KM Standard Error of Mean (logged) | 0.0321 | 95% H-UCL (KM -Log) | 0.049 |
| KM SD (logged) | 0.239 | 95% Critical H Value (KM-Log) | 1.721 |
| KM Standard Error of Mean (logged) | 0.0321 | | |
| Note: KM UCLs may be biased low with this dataset. Other substitution method recommended | | | |
| | | | |
| **DL/2 Statistics** | | | |
| **DL/2 Normal** | | **DL/2 Log-Transformed** | |
| Mean in Original Scale | 0.11 | Mean in Log Scale | -2.676 |
| SD in Original Scale | 0.151 | SD in Log Scale | 0.786 |
| 95% t UCL (Assumes normality) | 0.136 | 95% H-Stat UCL | 0.111 |
| DL/2 is not a recommended method, provided for comparisons and historical reasons | | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Detected Data appear Normal Distributed at 1% Significance Level | | | |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% KM (t) UCL | 0.0539 | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |

## UCL Statistics for Data Sets with Non-Detects

## Kosmos - Barium

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.2 9/28/2023 2:35:09 PM |
| From File | Barium_ProUCLInput.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Barium**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 95 | Number of Distinct Observations | 89 |
| | | Number of Missing Observations | 0 |
| Minimum | 21.1 | Mean | 64.45 |
| Maximum | 177 | Median | 56.8 |
| SD | 32.23 | Std. Error of Mean | 3.307 |
| Coefficient of Variation | 0.5 | Skewness | 1.14 |

### Normal GOF Test

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.905 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk P Value | 8.4498E-8 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.118 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.105 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

### Assuming Normal Distribution

| 95% Normal UCL | | 95% UCLs (Adjusted for Skewness) | |
|---|---|---|---|
| 95% Student's-t UCL | 69.94 | 95% Adjusted-CLT UCL (Chen-1995) | 70.3 |
| | | 95% Modified-t UCL (Johnson-1978) | 70 |

### Gamma GOF Test

| | | |
|---|---|---|
| A-D Test Statistic | 0.55 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.755 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.065 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.0921 | Detected data appear Gamma Distributed at 5% Significance Level |

Detected data appear Gamma Distributed at 5% Significance Level

### Gamma Statistics

| | | | |
|---|---|---|---|
| k hat (MLE) | 4.497 | k star (bias corrected MLE) | 4.362 |
| Theta hat (MLE) | 14.33 | Theta star (bias corrected MLE) | 14.77 |
| nu hat (MLE) | 854.5 | nu star (bias corrected) | 828.8 |
| MLE Mean (bias corrected) | 64.45 | MLE Sd (bias corrected) | 30.86 |
| | | Approximate Chi Square Value (0.05) | 763 |
| Adjusted Level of Significance | 0.0475 | Adjusted Chi Square Value | 762.1 |

### Assuming Gamma Distribution

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 70.01 | 95% Adjusted Gamma UCL | 70.09 |

| Lognormal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.973 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk P Value | 0.245 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.0577 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.0834 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |

| Lognormal Statistics | | | |
|---|---|---|---|
| Minimum of Logged Data | 3.049 | Mean of logged Data | 4.051 |
| Maximum of Logged Data | 5.176 | SD of logged Data | 0.482 |

| Assuming Lognormal Distribution | | | |
|---|---|---|---|
| 95% H-UCL | 70.67 | 90% Chebyshev (MVUE) UCL | 74.45 |
| 95% Chebyshev (MVUE) UCL | 79 | 97.5% Chebyshev (MVUE) UCL | 85.31 |
| 99% Chebyshev (MVUE) UCL | 97.72 | | |

| Nonparametric Distribution Free UCL Statistics |
|---|
| Data appear to follow a Discernible Distribution |

| Nonparametric Distribution Free UCLs | | | |
|---|---|---|---|
| 95% CLT UCL | 69.89 | 95% BCA Bootstrap UCL | 70.33 |
| 95% Standard Bootstrap UCL | 69.85 | 95% Bootstrap-t UCL | 70.3 |
| 95% Hall's Bootstrap UCL | 70.25 | 95% Percentile Bootstrap UCL | 70.09 |
| 90% Chebyshev(Mean, Sd) UCL | 74.37 | 95% Chebyshev(Mean, Sd) UCL | 78.86 |
| 97.5% Chebyshev(Mean, Sd) UCL | 85.1 | 99% Chebyshev(Mean, Sd) UCL | 97.35 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 70.01 | | |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Barium_1**

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 92 | Number of Distinct Observations | 87 |
| | | Number of Missing Observations | 3 |
| Minimum | 21.1 | Mean | 62.87 |
| Maximum | 177 | Median | 55.9 |
| SD | 31.49 | Std. Error of Mean | 3.283 |
| Coefficient of Variation | 0.501 | Skewness | 1.284 |

| Normal GOF Test | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.895 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk P Value | 1.5479E-8 | Data Not Normal at 1% Significance Level |

| | | | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.12 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.107 | Data Not Normal at 1% Significance Level | |
| Data Not Normal at 1% Significance Level | | | |
| | | | |
| **Assuming Normal Distribution** | | | |
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 68.33 | 95% Adjusted-CLT UCL (Chen-1995) | 68.74 |
| | | 95% Modified-t UCL (Johnson-1978) | 68.4 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.537 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.755 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.0636 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.0935 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 4.606 | k star (bias corrected MLE) | 4.463 |
| Theta hat (MLE) | 13.65 | Theta star (bias corrected MLE) | 14.09 |
| nu hat (MLE) | 847.5 | nu star (bias corrected) | 821.2 |
| MLE Mean (bias corrected) | 62.87 | MLE Sd (bias corrected) | 29.76 |
| | | Approximate Chi Square Value (0.05) | 755.7 |
| Adjusted Level of Significance | 0.0474 | Adjusted Chi Square Value | 754.7 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 68.32 | 95% Adjusted Gamma UCL | 68.41 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.975 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk P Value | 0.335 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.0576 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.0847 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | 3.049 | Mean of logged Data | 4.029 |
| Maximum of Logged Data | 5.176 | SD of logged Data | 0.474 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 68.84 | 90% Chebyshev (MVUE) UCL | 72.53 |
| 95% Chebyshev (MVUE) UCL | 76.95 | 97.5% Chebyshev (MVUE) UCL | 83.08 |
| 99% Chebyshev (MVUE) UCL | 95.13 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 68.27 | 95% BCA Bootstrap UCL | 69.22 |

| | | | |
|---|---|---|---|
| 95% Standard Bootstrap UCL | 68.35 | 95% Bootstrap-t UCL | 68.72 |
| 95% Hall's Bootstrap UCL | 68.67 | 95% Percentile Bootstrap UCL | 68.55 |
| 90% Chebyshev(Mean, Sd) UCL | 72.72 | 95% Chebyshev(Mean, Sd) UCL | 77.18 |
| 97.5% Chebyshev(Mean, Sd) UCL | 83.37 | 99% Chebyshev(Mean, Sd) UCL | 95.54 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Approximate Gamma UCL | 68.32 | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |

## UCL Statistics for Data Sets with Non-Detects

### Kosmos - Copper

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.2 10/10/2023 10:20:57 AM |
| From File | Copper_ProUCLInput.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Copper**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 83 | Number of Distinct Observations | 82 |
| | | Number of Missing Observations | 0 |
| Minimum | 26 | Mean | 52.72 |
| Maximum | 116 | Median | 48.7 |
| SD | 18.96 | Std. Error of Mean | 2.081 |
| Coefficient of Variation | 0.36 | Skewness | 1.024 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.922 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk P Value | 3.2011E-5 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.126 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.113 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 56.18 | 95% Adjusted-CLT UCL (Chen-1995) | 56.39 |
| | | 95% Modified-t UCL (Johnson-1978) | 56.22 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.497 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.752 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.0798 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.0981 | Detected data appear Gamma Distributed at 5% Significance Level |

Detected data appear Gamma Distributed at 5% Significance Level

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 8.59 | k star (bias corrected MLE) | 8.288 |
| Theta hat (MLE) | 6.137 | Theta star (bias corrected MLE) | 6.361 |
| nu hat (MLE) | 1426 | nu star (bias corrected) | 1376 |
| MLE Mean (bias corrected) | 52.72 | MLE Sd (bias corrected) | 18.31 |
| | | Approximate Chi Square Value (0.05) | 1291 |
| Adjusted Level of Significance | 0.0471 | Adjusted Chi Square Value | 1289 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 56.19 | 95% Adjusted Gamma UCL | 56.26 |

| Lognormal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.973 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk P Value | 0.287 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.0592 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.0891 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | 3.258 | Mean of logged Data | 3.906 |
| Maximum of Logged Data | 4.754 | SD of logged Data | 0.344 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 56.34 | 90% Chebyshev (MVUE) UCL | 58.78 |
| 95% Chebyshev (MVUE) UCL | 61.55 | 97.5% Chebyshev (MVUE) UCL | 65.39 |
| 99% Chebyshev (MVUE) UCL | 72.94 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 56.14 | 95% BCA Bootstrap UCL | 56.35 |
| 95% Standard Bootstrap UCL | 56.15 | 95% Bootstrap-t UCL | 56.51 |
| 95% Hall's Bootstrap UCL | 56.43 | 95% Percentile Bootstrap UCL | 56.26 |
| 90% Chebyshev(Mean, Sd) UCL | 58.96 | 95% Chebyshev(Mean, Sd) UCL | 61.79 |
| 97.5% Chebyshev(Mean, Sd) UCL | 65.71 | 99% Chebyshev(Mean, Sd) UCL | 73.42 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Approximate Gamma UCL | 56.19 | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |
| | | | |
| **Copper_1** | | | |
| | | | |
| **General Statistics** | | | |
| Total Number of Observations | 52 | Number of Distinct Observations | 51 |
| | | Number of Missing Observations | 31 |
| Minimum | 26 | Mean | 41.81 |
| Maximum | 74.6 | Median | 41.55 |
| SD | 9.732 | Std. Error of Mean | 1.35 |
| Coefficient of Variation | 0.233 | Skewness | 0.637 |
| | | | |
| **Normal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.963 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk P Value | 0.192 | Data appear Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.0601 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.141 | Data appear Normal at 1% Significance Level | |

| | | | |
|---|---|---|---|
| Data appear Normal at 1% Significance Level | | | |
| | | | |
| **Assuming Normal Distribution** | | | |
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 44.07 | 95% Adjusted-CLT UCL (Chen-1995) | 44.16 |
| | | 95% Modified-t UCL (Johnson-1978) | 44.09 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.269 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.748 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.0722 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.123 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 19.22 | k star (bias corrected MLE) | 18.12 |
| Theta hat (MLE) | 2.176 | Theta star (bias corrected MLE) | 2.307 |
| nu hat (MLE) | 1999 | nu star (bias corrected) | 1885 |
| MLE Mean (bias corrected) | 41.81 | MLE Sd (bias corrected) | 9.822 |
| | | Approximate Chi Square Value (0.05) | 1785 |
| Adjusted Level of Significance | 0.0454 | Adjusted Chi Square Value | 1782 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 44.15 | 95% Adjusted Gamma UCL | 44.22 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.975 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk P Value | 0.529 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.0841 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.112 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | 3.258 | Mean of logged Data | 3.707 |
| Maximum of Logged Data | 4.312 | SD of logged Data | 0.232 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 44.25 | 90% Chebyshev (MVUE) UCL | 45.9 |
| 95% Chebyshev (MVUE) UCL | 47.75 | 97.5% Chebyshev (MVUE) UCL | 50.32 |
| 99% Chebyshev (MVUE) UCL | 55.36 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 44.03 | 95% BCA Bootstrap UCL | 44.11 |
| 95% Standard Bootstrap UCL | 44.02 | 95% Bootstrap-t UCL | 44.23 |
| 95% Hall's Bootstrap UCL | 44.28 | 95% Percentile Bootstrap UCL | 44.06 |
| 90% Chebyshev(Mean, Sd) UCL | 45.86 | 95% Chebyshev(Mean, Sd) UCL | 47.69 |

| | | | |
|---|---|---|---|
| 97.5% Chebyshev(Mean, Sd) UCL | 50.24 | 99% Chebyshev(Mean, Sd) UCL | 55.24 |

**Suggested UCL to Use**

| | | | |
|---|---|---|---|
| 95% Student's-t UCL | 44.07 | | |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Copper_2**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 46 | Number of Distinct Observations | 45 |
| | | Number of Missing Observations | 37 |
| Minimum | 26 | Mean | 39.81 |
| Maximum | 58.8 | Median | 40.9 |
| SD | 7.913 | Std. Error of Mean | 1.167 |
| Coefficient of Variation | 0.199 | Skewness | 0.0317 |

**Normal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.969 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk Critical Value | 0.927 | Data appear Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.0844 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.151 | Data appear Normal at 1% Significance Level | |

Data appear Normal at 1% Significance Level

**Assuming Normal Distribution**

| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
|---|---|---|---|
| 95% Student's-t UCL | 41.77 | 95% Adjusted-CLT UCL (Chen-1995) | 41.73 |
| | | 95% Modified-t UCL (Johnson-1978) | 41.77 |

**Gamma GOF Test**

| | | | |
|---|---|---|---|
| A-D Test Statistic | 0.485 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.748 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.102 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.13 | Detected data appear Gamma Distributed at 5% Significance Level | |

Detected data appear Gamma Distributed at 5% Significance Level

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 24.99 | k star (bias corrected MLE) | 23.37 |
| Theta hat (MLE) | 1.593 | Theta star (bias corrected MLE) | 1.703 |
| nu hat (MLE) | 2299 | nu star (bias corrected) | 2150 |
| MLE Mean (bias corrected) | 39.81 | MLE Sd (bias corrected) | 8.234 |
| | | Approximate Chi Square Value (0.05) | 2044 |
| Adjusted Level of Significance | 0.0448 | Adjusted Chi Square Value | 2040 |

**Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 41.89 | 95% Adjusted Gamma UCL | 41.96 |

| Lognormal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.956 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk Critical Value | 0.953 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.113 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.119 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |

| Lognormal Statistics | | | |
|---|---|---|---|
| Minimum of Logged Data | 3.258 | Mean of logged Data | 3.664 |
| Maximum of Logged Data | 4.074 | SD of logged Data | 0.206 |

| Assuming Lognormal Distribution | | | |
|---|---|---|---|
| 95% H-UCL | 42.07 | 90% Chebyshev (MVUE) UCL | 43.48 |
| 95% Chebyshev (MVUE) UCL | 45.14 | 97.5% Chebyshev (MVUE) UCL | 47.43 |
| 99% Chebyshev (MVUE) UCL | 51.94 | | |

| Nonparametric Distribution Free UCL Statistics |
|---|
| Data appear to follow a Discernible Distribution |

| Nonparametric Distribution Free UCLs | | | |
|---|---|---|---|
| 95% CLT UCL | 41.73 | 95% BCA Bootstrap UCL | 41.67 |
| 95% Standard Bootstrap UCL | 41.67 | 95% Bootstrap-t UCL | 41.66 |
| 95% Hall's Bootstrap UCL | 41.64 | 95% Percentile Bootstrap UCL | 41.68 |
| 90% Chebyshev(Mean, Sd) UCL | 43.31 | 95% Chebyshev(Mean, Sd) UCL | 44.89 |
| 97.5% Chebyshev(Mean, Sd) UCL | 47.09 | 99% Chebyshev(Mean, Sd) UCL | 51.42 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% Student's-t UCL | 41.77 | | |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

## UCL Statistics for Data Sets with Non-Detects

## Kosmos - Chromium and Nickel

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.2 9/28/2023 3:08:50 PM |
| From File | Cr_Ni_ProUCLInput.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Chromium**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 95 | Number of Distinct Observations | 75 |
| | | Number of Missing Observations | 0 |
| Minimum | 6.18 | Mean | 15.66 |
| Maximum | 43.6 | Median | 15 |
| SD | 6.095 | Std. Error of Mean | 0.625 |
| Coefficient of Variation | 0.389 | Skewness | 1.409 |

### Normal GOF Test

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.919 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk P Value | 2.4288E-6 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.102 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.105 | Data appear Normal at 1% Significance Level |

Data appear Approximate Normal at 1% Significance Level

### Assuming Normal Distribution

| 95% Normal UCL | | 95% UCLs (Adjusted for Skewness) | |
|---|---|---|---|
| 95% Student's-t UCL | 16.7 | 95% Adjusted-CLT UCL (Chen-1995) | 16.78 |
| | | 95% Modified-t UCL (Johnson-1978) | 16.71 |

### Gamma GOF Test

| | | |
|---|---|---|
| A-D Test Statistic | 0.35 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.753 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.0572 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.0919 | Detected data appear Gamma Distributed at 5% Significance Level |

Detected data appear Gamma Distributed at 5% Significance Level

### Gamma Statistics

| | | | |
|---|---|---|---|
| k hat (MLE) | 7.457 | k star (bias corrected MLE) | 7.229 |
| Theta hat (MLE) | 2.1 | Theta star (bias corrected MLE) | 2.166 |
| nu hat (MLE) | 1417 | nu star (bias corrected) | 1373 |
| MLE Mean (bias corrected) | 15.66 | MLE Sd (bias corrected) | 5.824 |
| | | Approximate Chi Square Value (0.05) | 1288 |
| Adjusted Level of Significance | 0.0475 | Adjusted Chi Square Value | 1287 |

### Assuming Gamma Distribution

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 16.69 | 95% Adjusted Gamma UCL | 16.71 |

| Lognormal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.985 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk P Value | 0.808 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.0648 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.0834 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |

| Lognormal Statistics | | | |
|---|---|---|---|
| Minimum of Logged Data | 1.821 | Mean of logged Data | 2.682 |
| Maximum of Logged Data | 3.775 | SD of logged Data | 0.371 |

| Assuming Lognormal Distribution | | | |
|---|---|---|---|
| 95% H-UCL | 16.76 | 90% Chebyshev (MVUE) UCL | 17.49 |
| 95% Chebyshev (MVUE) UCL | 18.33 | 97.5% Chebyshev (MVUE) UCL | 19.48 |
| 99% Chebyshev (MVUE) UCL | 21.76 | | |

| Nonparametric Distribution Free UCL Statistics |
|---|
| Data appear to follow a Discernible Distribution |

| Nonparametric Distribution Free UCLs | | | |
|---|---|---|---|
| 95% CLT UCL | 16.69 | 95% BCA Bootstrap UCL | 16.77 |
| 95% Standard Bootstrap UCL | 16.68 | 95% Bootstrap-t UCL | 16.81 |
| 95% Hall's Bootstrap UCL | 16.84 | 95% Percentile Bootstrap UCL | 16.68 |
| 90% Chebyshev(Mean, Sd) UCL | 17.53 | 95% Chebyshev(Mean, Sd) UCL | 18.38 |
| 97.5% Chebyshev(Mean, Sd) UCL | 19.56 | 99% Chebyshev(Mean, Sd) UCL | 21.88 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% Student's-t UCL | 16.7 | | |

When a data set follows an approximate distribution passing only one of the GOF tests,

it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Nickel**

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 83 | Number of Distinct Observations | 71 |
| | | Number of Missing Observations | 8 |
| Minimum | 6.15 | Mean | 15.3 |
| Maximum | 59.5 | Median | 14.4 |
| SD | 7.188 | Std. Error of Mean | 0.789 |
| Coefficient of Variation | 0.47 | Skewness | 2.963 |

| Normal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.799 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk P Value | 3.331E-16 | Data Not Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.112 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.113 | Data appear Normal at 1% Significance Level | |
| Data appear Approximate Normal at 1% Significance Level | | | |
| | | | |
| **Assuming Normal Distribution** | | | |
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 16.61 | 95% Adjusted-CLT UCL (Chen-1995) | 16.87 |
| | | 95% Modified-t UCL (Johnson-1978) | 16.65 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 0.647 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.754 | Detected data appear Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.0771 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.0982 | Detected data appear Gamma Distributed at 5% Significance Level | |
| Detected data appear Gamma Distributed at 5% Significance Level | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 6.125 | k star (bias corrected MLE) | 5.912 |
| Theta hat (MLE) | 2.498 | Theta star (bias corrected MLE) | 2.588 |
| nu hat (MLE) | 1017 | nu star (bias corrected) | 981.4 |
| MLE Mean (bias corrected) | 15.3 | MLE Sd (bias corrected) | 6.292 |
| | | Approximate Chi Square Value (0.05) | 909.7 |
| Adjusted Level of Significance | 0.0471 | Adjusted Chi Square Value | 908.4 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 16.5 | 95% Adjusted Gamma UCL | 16.53 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.968 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk P Value | 0.148 | Data appear Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.0765 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.0891 | Data appear Lognormal at 10% Significance Level | |
| Data appear Lognormal at 10% Significance Level | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | 1.816 | Mean of logged Data | 2.644 |
| Maximum of Logged Data | 4.086 | SD of logged Data | 0.401 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 16.51 | 90% Chebyshev (MVUE) UCL | 17.32 |
| 95% Chebyshev (MVUE) UCL | 18.26 | 97.5% Chebyshev (MVUE) UCL | 19.57 |
| 99% Chebyshev (MVUE) UCL | 22.15 | | |
| | | | |
| **Nonparametric Distribution Free UCL Statistics** | | | |
| Data appear to follow a Discernible Distribution | | | |

| Nonparametric Distribution Free UCLs | | | |
|---|---|---|---|
| 95% CLT UCL | 16.6 | 95% BCA Bootstrap UCL | 16.81 |
| 95% Standard Bootstrap UCL | 16.58 | 95% Bootstrap-t UCL | 16.91 |
| 95% Hall's Bootstrap UCL | 17.46 | 95% Percentile Bootstrap UCL | 16.62 |
| 90% Chebyshev(Mean, Sd) UCL | 17.67 | 95% Chebyshev(Mean, Sd) UCL | 18.74 |
| 97.5% Chebyshev(Mean, Sd) UCL | 20.23 | 99% Chebyshev(Mean, Sd) UCL | 23.15 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% Student's-t UCL | 16.61 | | |

When a data set follows an approximate distribution passing only one of the GOF tests,

it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

## UCL Statistics for Data Sets with Non-Detects

## Kosmos - Lead

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.2 9/28/2023 3:54:22 PM |
| From File | Lead_ProUCLInput.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Lead**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 95 | Number of Distinct Observations | 85 |
| | | Number of Missing Observations | 0 |
| Minimum | 1.75 | Mean | 9.94 |
| Maximum | 157 | Median | 3.55 |
| SD | 21.72 | Std. Error of Mean | 2.228 |
| Coefficient of Variation | 2.185 | Skewness | 4.624 |

### Normal GOF Test

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.401 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk P Value | 0 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.39 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.105 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

### Assuming Normal Distribution

| 95% Normal UCL | | 95% UCLs (Adjusted for Skewness) | |
|---|---|---|---|
| 95% Student's-t UCL | 13.64 | 95% Adjusted-CLT UCL (Chen-1995) | 14.73 |
| | | 95% Modified-t UCL (Johnson-1978) | 13.82 |

### Gamma GOF Test

| | | |
|---|---|---|
| A-D Test Statistic | 14.21 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.792 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.325 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.0953 | Data Not Gamma Distributed at 5% Significance Level |

Data Not Gamma Distributed at 5% Significance Level

### Gamma Statistics

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.8 | k star (bias corrected MLE) | 0.782 |
| Theta hat (MLE) | 12.42 | Theta star (bias corrected MLE) | 12.71 |
| nu hat (MLE) | 152.1 | nu star (bias corrected) | 148.6 |
| MLE Mean (bias corrected) | 9.94 | MLE Sd (bias corrected) | 11.24 |
| | | Approximate Chi Square Value (0.05) | 121.4 |
| Adjusted Level of Significance | 0.0475 | Adjusted Chi Square Value | 121 |

### Assuming Gamma Distribution

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 12.16 | 95% Adjusted Gamma UCL | 12.2 |

| Lognormal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.759 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk P Value | 0 | Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.215 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.0834 | Data Not Lognormal at 10% Significance Level | |
| Data Not Lognormal at 10% Significance Level | | | |

| Lognormal Statistics | | | |
|---|---|---|---|
| Minimum of Logged Data | 0.56 | Mean of logged Data | 1.555 |
| Maximum of Logged Data | 5.056 | SD of logged Data | 0.934 |

| Assuming Lognormal Distribution | | | |
|---|---|---|---|
| 95% H-UCL | 9.043 | 90% Chebyshev (MVUE) UCL | 9.735 |
| 95% Chebyshev (MVUE) UCL | 10.85 | 97.5% Chebyshev (MVUE) UCL | 12.39 |
| 99% Chebyshev (MVUE) UCL | 15.43 | | |

| Nonparametric Distribution Free UCL Statistics |
|---|
| Data do not follow a Discernible Distribution |

| Nonparametric Distribution Free UCLs | | | |
|---|---|---|---|
| 95% CLT UCL | 13.6 | 95% BCA Bootstrap UCL | 14.56 |
| 95% Standard Bootstrap UCL | 13.63 | 95% Bootstrap-t UCL | 16.19 |
| 95% Hall's Bootstrap UCL | 15.64 | 95% Percentile Bootstrap UCL | 13.9 |
| 90% Chebyshev(Mean, Sd) UCL | 16.62 | 95% Chebyshev(Mean, Sd) UCL | 19.65 |
| 97.5% Chebyshev(Mean, Sd) UCL | 23.85 | 99% Chebyshev(Mean, Sd) UCL | 32.11 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% Student's-t UCL | 13.64 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Lead_1**

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 94 | Number of Distinct Observations | 84 |
| | | Number of Missing Observations | 1 |
| Minimum | 1.75 | Mean | 8.375 |
| Maximum | 85.2 | Median | 3.495 |
| SD | 15.54 | Std. Error of Mean | 1.603 |

| | | | |
|---|---|---|---|
| Coefficient of Variation | 1.856 | Skewness | 3.753 |
| | | | |
| **Normal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.426 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk P Value | 0 | Data Not Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.387 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.106 | Data Not Normal at 1% Significance Level | |
| **Data Not Normal at 1% Significance Level** | | | |
| | | | |
| **Assuming Normal Distribution** | | | |
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 11.04 | 95% Adjusted-CLT UCL (Chen-1995) | 11.68 |
| | | 95% Modified-t UCL (Johnson-1978) | 11.14 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 12.96 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.785 | Data Not Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.305 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.0952 | Data Not Gamma Distributed at 5% Significance Level | |
| **Data Not Gamma Distributed at 5% Significance Level** | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 0.955 | k star (bias corrected MLE) | 0.932 |
| Theta hat (MLE) | 8.768 | Theta star (bias corrected MLE) | 8.988 |
| nu hat (MLE) | 179.6 | nu star (bias corrected) | 175.2 |
| MLE Mean (bias corrected) | 8.375 | MLE Sd (bias corrected) | 8.676 |
| | | Approximate Chi Square Value (0.05) | 145.6 |
| Adjusted Level of Significance | 0.0474 | Adjusted Chi Square Value | 145.2 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 10.08 | 95% Adjusted Gamma UCL | 10.11 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.767 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk P Value | 0 | Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.2 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.0838 | Data Not Lognormal at 10% Significance Level | |
| **Data Not Lognormal at 10% Significance Level** | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | 0.56 | Mean of logged Data | 1.518 |
| Maximum of Logged Data | 4.445 | SD of logged Data | 0.865 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 8.023 | 90% Chebyshev (MVUE) UCL | 8.633 |
| 95% Chebyshev (MVUE) UCL | 9.555 | 97.5% Chebyshev (MVUE) UCL | 10.83 |
| 99% Chebyshev (MVUE) UCL | 13.35 | | |

| Nonparametric Distribution Free UCL Statistics | | | |
|---|---|---|---|
| Data do not follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 11.01 | 95% BCA Bootstrap UCL | 11.65 |
| 95% Standard Bootstrap UCL | 10.96 | 95% Bootstrap-t UCL | 12.09 |
| 95% Hall's Bootstrap UCL | 11.3 | 95% Percentile Bootstrap UCL | 11.13 |
| 90% Chebyshev(Mean, Sd) UCL | 13.19 | 95% Chebyshev(Mean, Sd) UCL | 15.36 |
| 97.5% Chebyshev(Mean, Sd) UCL | 18.39 | 99% Chebyshev(Mean, Sd) UCL | 24.33 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 11.04 | | |
| | | | |
| The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner. | | | |
| Please verify the data were collected from random locations. | | | |
| If the data were collected using judgmental or other non-random methods, | | | |
| then contact a statistician to correctly calculate UCLs. | | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |

## UCL Statistics for Data Sets with Non-Detects

## Kosmos - Zinc

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.2 9/28/2023 5:37:04 PM |
| From File | Zinc_ProUCLInput.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Zinc**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 83 | Number of Distinct Observations | 78 |
| | | Number of Missing Observations | 0 |
| Minimum | 30.6 | Mean | 75.69 |
| Maximum | 1120 | Median | 49.9 |
| SD | 134.6 | Std. Error of Mean | 14.78 |
| Coefficient of Variation | 1.779 | Skewness | 6.593 |

### Normal GOF Test

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.291 | **Shapiro Wilk GOF Test** |
| 1% Shapiro Wilk P Value | 0 | Data Not Normal at 1% Significance Level |
| Lilliefors Test Statistic | 0.408 | **Lilliefors GOF Test** |
| 1% Lilliefors Critical Value | 0.113 | Data Not Normal at 1% Significance Level |

Data Not Normal at 1% Significance Level

### Assuming Normal Distribution

| 95% Normal UCL | | 95% UCLs (Adjusted for Skewness) | |
|---|---|---|---|
| 95% Student's-t UCL | 100.3 | 95% Adjusted-CLT UCL (Chen-1995) | 111.4 |
| | | 95% Modified-t UCL (Johnson-1978) | 102.1 |

### Gamma GOF Test

| | | |
|---|---|---|
| A-D Test Statistic | 13.71 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.768 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.346 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.0997 | Data Not Gamma Distributed at 5% Significance Level |

Data Not Gamma Distributed at 5% Significance Level

### Gamma Statistics

| | | | |
|---|---|---|---|
| k hat (MLE) | 1.716 | k star (bias corrected MLE) | 1.662 |
| Theta hat (MLE) | 44.12 | Theta star (bias corrected MLE) | 45.55 |
| nu hat (MLE) | 284.8 | nu star (bias corrected) | 275.8 |
| MLE Mean (bias corrected) | 75.69 | MLE Sd (bias corrected) | 58.72 |
| | | Approximate Chi Square Value (0.05) | 238.4 |
| Adjusted Level of Significance | 0.0471 | Adjusted Chi Square Value | 237.8 |

### Assuming Gamma Distribution

| | | | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 87.59 | 95% Adjusted Gamma UCL | 87.81 |

| Lognormal GOF Test | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.673 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk P Value | 0 | Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.253 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.0891 | Data Not Lognormal at 10% Significance Level | |
| Data Not Lognormal at 10% Significance Level | | | |

| Lognormal Statistics | | | |
|---|---|---|---|
| Minimum of Logged Data | 3.421 | Mean of logged Data | 4.008 |
| Maximum of Logged Data | 7.021 | SD of logged Data | 0.565 |

| Assuming Lognormal Distribution | | | |
|---|---|---|---|
| 95% H-UCL | 72.59 | 90% Chebyshev (MVUE) UCL | 77.2 |
| 95% Chebyshev (MVUE) UCL | 83 | 97.5% Chebyshev (MVUE) UCL | 91.05 |
| 99% Chebyshev (MVUE) UCL | 106.9 | | |

| Nonparametric Distribution Free UCL Statistics |
|---|
| Data do not follow a Discernible Distribution |

| Nonparametric Distribution Free UCLs | | | |
|---|---|---|---|
| 95% CLT UCL | 100 | 95% BCA Bootstrap UCL | 114.8 |
| 95% Standard Bootstrap UCL | 99.95 | 95% Bootstrap-t UCL | 170.4 |
| 95% Hall's Bootstrap UCL | 190.2 | 95% Percentile Bootstrap UCL | 102.9 |
| 90% Chebyshev(Mean, Sd) UCL | 120 | 95% Chebyshev(Mean, Sd) UCL | 140.1 |
| 97.5% Chebyshev(Mean, Sd) UCL | 168 | 99% Chebyshev(Mean, Sd) UCL | 222.7 |

| Suggested UCL to Use | | | |
|---|---|---|---|
| 95% Student's-t UCL | 100.3 | | |

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,

then contact a statistician to correctly calculate UCLs.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

**Zinc_1**

| General Statistics | | | |
|---|---|---|---|
| Total Number of Observations | 79 | Number of Distinct Observations | 74 |
| | | Number of Missing Observations | 4 |
| Minimum | 30.6 | Mean | 51.71 |
| Maximum | 132 | Median | 48.8 |
| SD | 17.53 | Std. Error of Mean | 1.972 |

| | | | |
|---|---|---|---|
| Coefficient of Variation | 0.339 | Skewness | 2.335 |
| | | | |
| **Normal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.787 | **Shapiro Wilk GOF Test** | |
| 1% Shapiro Wilk P Value | 3.331E-16 | Data Not Normal at 1% Significance Level | |
| Lilliefors Test Statistic | 0.195 | **Lilliefors GOF Test** | |
| 1% Lilliefors Critical Value | 0.115 | Data Not Normal at 1% Significance Level | |
| **Data Not Normal at 1% Significance Level** | | | |
| | | | |
| **Assuming Normal Distribution** | | | |
| **95% Normal UCL** | | **95% UCLs (Adjusted for Skewness)** | |
| 95% Student's-t UCL | 55 | 95% Adjusted-CLT UCL (Chen-1995) | 55.51 |
| | | 95% Modified-t UCL (Johnson-1978) | 55.08 |
| | | | |
| **Gamma GOF Test** | | | |
| A-D Test Statistic | 2.082 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.751 | Data Not Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.146 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.1 | Data Not Gamma Distributed at 5% Significance Level | |
| **Data Not Gamma Distributed at 5% Significance Level** | | | |
| | | | |
| **Gamma Statistics** | | | |
| k hat (MLE) | 11.67 | k star (bias corrected MLE) | 11.23 |
| Theta hat (MLE) | 4.432 | Theta star (bias corrected MLE) | 4.603 |
| nu hat (MLE) | 1844 | nu star (bias corrected) | 1775 |
| MLE Mean (bias corrected) | 51.71 | MLE Sd (bias corrected) | 15.43 |
| | | Approximate Chi Square Value (0.05) | 1678 |
| Adjusted Level of Significance | 0.047 | Adjusted Chi Square Value | 1676 |
| | | | |
| **Assuming Gamma Distribution** | | | |
| 95% Approximate Gamma UCL | 54.7 | 95% Adjusted Gamma UCL | 54.76 |
| | | | |
| **Lognormal GOF Test** | | | |
| Shapiro Wilk Test Statistic | 0.926 | **Shapiro Wilk Lognormal GOF Test** | |
| 10% Shapiro Wilk P Value | 1.2352E-4 | Data Not Lognormal at 10% Significance Level | |
| Lilliefors Test Statistic | 0.123 | **Lilliefors Lognormal GOF Test** | |
| 10% Lilliefors Critical Value | 0.0913 | Data Not Lognormal at 10% Significance Level | |
| **Data Not Lognormal at 10% Significance Level** | | | |
| | | | |
| **Lognormal Statistics** | | | |
| Minimum of Logged Data | 3.421 | Mean of logged Data | 3.902 |
| Maximum of Logged Data | 4.883 | SD of logged Data | 0.282 |
| | | | |
| **Assuming Lognormal Distribution** | | | |
| 95% H-UCL | 54.46 | 90% Chebyshev (MVUE) UCL | 56.48 |
| 95% Chebyshev (MVUE) UCL | 58.74 | 97.5% Chebyshev (MVUE) UCL | 61.87 |
| 99% Chebyshev (MVUE) UCL | 68.03 | | |

| Nonparametric Distribution Free UCL Statistics | | | |
|---|---|---|---|
| Data do not follow a Discernible Distribution | | | |
| | | | |
| **Nonparametric Distribution Free UCLs** | | | |
| 95% CLT UCL | 54.96 | 95% BCA Bootstrap UCL | 55.82 |
| 95% Standard Bootstrap UCL | 55.01 | 95% Bootstrap-t UCL | 55.95 |
| 95% Hall's Bootstrap UCL | 56.18 | 95% Percentile Bootstrap UCL | 55.25 |
| 90% Chebyshev(Mean, Sd) UCL | 57.63 | 95% Chebyshev(Mean, Sd) UCL | 60.31 |
| 97.5% Chebyshev(Mean, Sd) UCL | 64.03 | 99% Chebyshev(Mean, Sd) UCL | 71.33 |
| | | | |
| **Suggested UCL to Use** | | | |
| 95% Student's-t UCL | 55 | | |
| | | | |
| Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | |
| Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. | | | |
| However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | |
| | | | |