Remediation Management Services Company

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January 14, 2022

Washington Department of Ecology
Northwest Regional Office
Attn: VCP Coordinator
15700 Dayton Avenue North
Shoreline, WA 98133

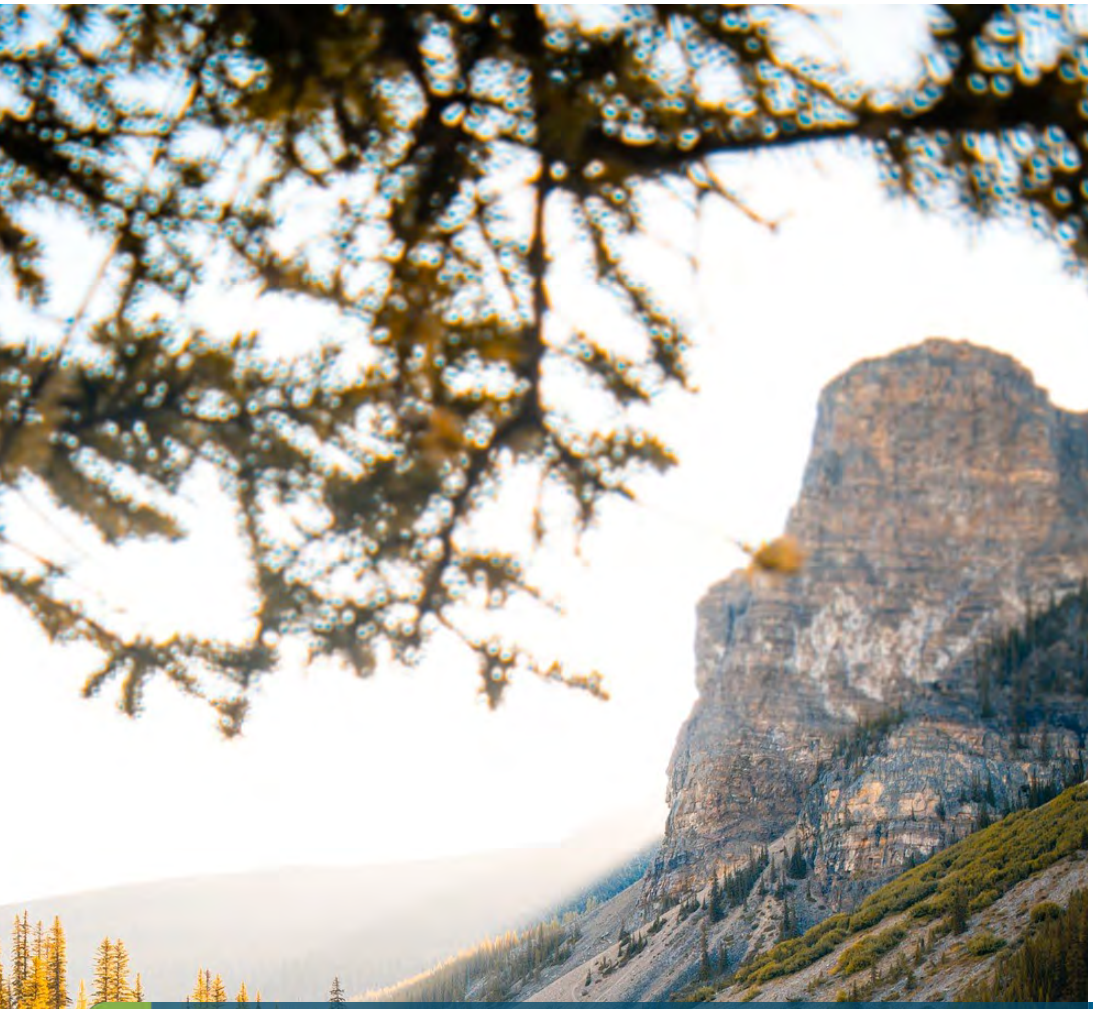
Dear VCP Coordinator:

Please find the enclosed Sucsurface Investigation Report, that documents the results at ARCO Facility No. 980 located at 10822 Roosevelt Way NE, Seattle, Washington.

Sincerely yours,

Wade Melton
Operations Project Manager
Remediation Management Services Company
An affiliate of Atlantic Richfield Company

cc: File, Antea Group



Subsurface Investigation Report

ARCO Facility No. 980

10822 Roosevelt Way NE, Seattle, Washington

Antea®Group

Understanding today.
Improving tomorrow.

PREPARED FOR

Remediation Management Services Company
An affiliate of Atlantic Richfield Company
4 Centerpointe Drive, Suite 200
Room LPR-4-222
La Palma, CA 90623

PREPARED BY

Antea Group, Seattle WA
January 14, 2022
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Subsurface Investigation Report

ARCO Facility No. 980

10822 Roosevelt Way NE, Seattle, Washington

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE OF WORK

On behalf of Remediation Management Services Company (RMSC, a BP affiliated company), Antea®Group (Antea Group) conducted a subsurface investigation at Atlantic Richfield Company (ARCO) Facility No. 980, located at 10822 Roosevelt Way NE, Seattle, King County, Washington (hereinafter referred to as the "Site"). The investigation, which consisted of the installation of two monitoring wells, was conducted in September 2021. The objective of the assessment was to delineate the extent of contamination in soil and/or groundwater east of the underground storage tanks (USTs) and existing monitoring well MW-7.

The investigation scope of work will include the following:

- Update the Health and Safety Plan (HASP) for the Site;
- Request a public locate via the One-Call Notification Center;
- Conduct a meeting with subcontractors to develop Level 2 Task Risk Assessment (TRA);
- Contract Applied Professional Services (APS) of North Bend, WA to identify all private utilities at the Site;
- If warranted, expose utilities within 2 feet of proposed well locations;
- Conduct utility pre-clearance at each boring location to a minimum of 6.5 feet below ground surface (bgs) using a vacuum truck and air-knife;
- Advance two soil borings and subsequently complete them as 2-inch diameter groundwater monitoring wells to an approximate depth of 25 feet bgs using a sonic drill rig;
- Collect soil samples and submit select samples for quantitative chemical analyses;
- Survey the locations and relative vertical elevations of the monitoring wells;
- Collect a groundwater samples from the monitoring wells and submitting the sample for quantitative chemical analyses;
- Interpret the data obtained; and
- Prepare this report.

1.2 SITE DESCRIPTION

The Site is an active ARCO branded retail gasoline station with a convenience store located on the southeast corner of the intersection of Roosevelt Way NE and NE Northgate Way in Seattle, Washington. A Site Location Map and Site Aerial Map are presented as Figures 1 and 2, respectively. The Site extends south to the Caribbean House Apartments. The parking lot of the apartment building is approximately 5 feet lower in elevation than the station's grade. The two properties are separated by a cinder block retaining wall. The Site vicinity is a mix of commercial and residential land uses. The closest surface water body is Thornton Creek located approximately 250 feet south of the Site. According to Google Earth, the Site is approximately 260 feet above mean sea level.

Site features include the station building with a canopy extending north from the building over two pump islands and a separate canopy west of the building over a third pump island. The underground storage tank (UST) complex containing four double-walled tanks is located to the northeast of the station building. The Site surface

consists of asphalt pavement and concrete except in three designated planter areas. A Site Map detailing the structures is presented on Figure 3.

1.3 PREVIOUS INVESTIGATIONS

A summary of previous assessments is described below:

1.3.1 DECEMBER 1989 – PRELIMINARY SOIL ASSESSMENT

On September 12, 1989, ARCO contracted Geraghty & Miller (G&M) to install four soil borings (B1 – B4) in the vicinity of the UST complex at the Site. The soil borings were installed as part of a preliminary soil assessment prior to UST removal activities. Hydrocarbon concentrations were detected above MTCA Method A cleanup levels at three of the four borings. Additional information pertaining to this investigation was reported in G&M's Preliminary Subsurface Assessment Report dated October 25, 1989.

1.3.2 OCTOBER 1990 – STATION UPGRADES

In October 1990, ARCO contracted Joe Hall Construction Company to remove four gasoline USTs, and the associated product distribution piping from the Site. The USTs consisted of one 10,000-gallon steel UST, and three 6,000-gallon steel USTs. Petroleum hydrocarbon concentrations were detected above the MTCA Method A Cleanup Levels in soil samples collected from the UST cavity and from below the product lines. During excavation activities, an abandoned septic tank was discovered. Light non-aqueous phase liquid (LNAPL) was measured in the abandoned septic tank and the contents were removed; however, the septic tank was left in place due to the proximity to structures on the ARCO property. In addition to the gasoline USTs, a waste oil UST was also reportedly removed. Additional information pertaining to this investigation was reported in G&M's Site Assessment During Underground Storage Tank Removal report dated August 7, 1991.

1.3.3 MARCH 1992 – SOIL GAS SURVEY

On March 30 and 31, 1992, G&M subcontracted Tracer Research Corporation (Tracer) to conduct a soil-gas survey at the Site to determine the approximate distribution of hydrocarbons and potential locations for bioventing and monitoring wells. Fifteen soil-gas samples were collected and analyzed onsite by Tracer for total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and xylenes (BTEX). Soil-gas as TVH was detected in 10 of the soil-gas samples. The highest concentrations of TVH were detected in samples collected along the east side of the Site from sampling locations SG-1 at 11 feet bgs and SG-2 at 8 feet bgs. Additional information pertaining to this investigation was reported in Tracer's Shallow Soil Gas Investigation dated April 13, 1992.

1.3.4 AUGUST AND SEPTEMBER 1992 – MONITORING WELL AND BIOVENTING WELL INSTALLATION

Between August 18 and 21 1992, ARCO contracted G&M to install 10 soil borings at the Site. Five soil borings were subsequently completed as groundwater monitoring wells (MW-1 through MW-5), and five borings were completed as bioventing wells (BV-1 through BV-5). Petroleum hydrocarbon concentrations were detected above the MTCA Method A Cleanup Levels in soil samples collected from the borings for MW-1, MW-4, MW-5, BV 3, and BV-5. Groundwater samples were collected from each of the five monitoring wells on September 22, 1992. Groundwater samples collected from MW-2, MW-4, and MW-5 contained concentrations of dissolved petroleum hydrocarbons, BTEX, total petroleum hydrocarbons as diesel (TPH-D), and/or total lead in excess of cleanup levels. LNAPL was subsequently measured in wells MW-4 and BV-3 in March 1993. Additional information pertaining to this investigation was reported in G&M's Site Characterization dated January 28, 1993.

1.3.5 1993 – MONITORING WELL INSTALLATION AND SOIL VAPOR EXTRACTION PILOT TEST

In early 1993, ARC contracted G&M to install four additional soil borings to further delineate soil and groundwater contamination at the Site. Two soil borings were subsequently completed as groundwater monitoring wells (MW-6 and MW-7), and two borings were completed as bioventing wells (BV-6 and BV-7). In addition to the subsurface investigation, a soil vapor extraction (SVE) feasibility test was conducted on select bioventing wells. Soil samples collected from MW-6 and BV-7 contained concentrations of petroleum hydrocarbons in excess of cleanup levels. Additional information pertaining to this investigation was reported in G&M's Additional Site Characterization and Soil Vapor Extraction Field Testing report dated July 12, 1993.

1.3.6 SEPTEMBER 1993 – OFFSITE INVESTIGATION

James P. Hurley and Company (JPHC) completed Phase I and Phase II Environmental Site Assessments (ESA) for the adjacent property located at 10800 Roosevelt Way NE, located just south of the ARCO station (Caribbean Apartments). The Phase II ESA included the installation of three soil borings on the Caribbean House Apartments property, two of which were completed as groundwater monitoring wells B1 (JPHC) and B3 (JPHC). The results of the assessment indicated the presence of elevated hydrocarbon concentrations in soil and groundwater. Additional information pertaining to this investigation was reported in JPHCs Phase II Environmental Site Assessment Report dated November 20, 1993.

1.3.7 1994 – OFFSITE INVESTIGATION AND WELL INSTALLATION

In early 1994, G&M completed a subsurface investigation on the Caribbean House Apartments property. The investigation consisted of the installation of nine soil borings. Three soil borings were completed as groundwater monitoring wells (MW-8 through MW-10), two as nested pressure and vacuum monitoring wells (VP-1 and VP-2), one soil vacuum extraction well nested with one air sparge well (SVE-1/AS-1) one SVE well (SVE-2), and two air sparge wells (AS-2 and AS-3). Additional information pertaining to this investigation was reported in G&M's Off-Site Assessment dated July 7, 1994.

1.3.8 SEPTEMBER 1994 – SOIL VAPOR EXTRACTION SYSTEM INSTALLATION

In September 1994, G&M installed a soil vapor extraction system with a combination thermal and catalytic oxidizer at the Site. The SVE system extracted from wells BV-3, BV-7 and MW-5. The SVE system was started in November 1994 by Delta Consultants (Delta).

1.3.9 MARCH 1995 – AIR SPARGE PILOT TEST

In March and April 1995, Delta oversaw the installation of two air sparge wells (AS-4 and AS-5), and one monitoring well (MW-11) at the Site. Soil samples AS-5-12 and MW-11-17 contained concentrations of total petroleum hydrocarbons as gasoline (TPH-G) at 1,200 parts per million (ppm) and 140 ppm, respectively. Concentrations of BTEX were detected in AS-5-12, ranging from 4.7 ppm (benzene) to 240 ppm (xylenes). Following installation of the air sparge wells, Delta completed an air sparge pilot test on the newly installed air sparge wells with favorable results. Additional information pertaining to this investigation was reported in Delta's Air Sparging Pilot Test Report dated November 8, 1995.

1.3.10 APRIL 1996 – REMEDIATION SYSTEM UPGRADES

In April 1996, the remediation system was shut down for system upgrades. Remediation system upgrades included the addition of air sparge components, the enlargement of existing SVE wells from 2 to 4-inch diameter wells and installing more SVE and air sparge wells. The remediation system was restarted on May 1, 1996.

1.3.11 JULY 1996 – ADDITIONAL ASSESSMENT

In July 1996, Delta oversaw the installation of soil borings B-4 and B-5 and monitoring well MW-12 on the Caribbean House Apartments property for additional assessment and delineation of soil and groundwater impacts. Soil analytical results indicated concentrations of TPH-G and/or benzene from sample B-4 and 20 feet bgs and MW-12 at 10 feet bgs. Additional information pertaining to this investigation was reported in Delta's Offsite Assessment Activities Report dated July 1996.

1.3.12 SEPTEMBER 1997 – ENHANCED FLUID RECOVERY PROGRAM

In September 1997, Delta began an enhanced fluid recovery (EFR) program for the recovery of LNAPL and petroleum hydrocarbon impacted groundwater from wells located on the Site and the Caribbean House Apartments property. EFR events were conducted through 2003. Details on volumes recovered are included in groundwater monitoring reports for the Site.

1.3.13 OCTOBER 1999 – AIR SPARGE SYSTEM SHUTDOWN

In October 1999, the air sparge portion of the remediation system was shut down.

1.3.14 AUGUST 2002 – TEMPORARY SYSTEM SHUTDOWN

In August 2002, the SVE system was shut down to evaluate LNAPL rebound.

1.3.15 OCTOBER 2005 – REMEDIATION SYSTEM EXPANSION

In October 2005, Delta oversaw the installation of additional remediation wells at the Site. In preparation for the installation of a dual phase extraction (DPE) remediation system, six extraction wells (EX-1 through EX-6) were installed along the southern portion of the ARCO property. Soil samples were collected during extraction well installation. Soil analytical results indicated the presence of benzene and TPH-G in the soil samples collected from EX-4 at 16.5 and 21 feet bgs. The system was tested and optimized before being placed in full-time operation in the first quarter 2008. The DPE system operated at the Site until fourth quarter 2012, when it was shut down and subsequently removed in August 2014. A total of 6,583,867 gallons of water was treated and discharged to sanitary sewer during the operational lifetime of the DPE system. Additional information was reported in and Delta's Remediation System Installation Report dated April 11, 2008.

1.3.16 DECEMBER 2014 – INJECTION WELL INSTALLATION

In December 2014, Innovex Environmental Management, Inc. (Innovex) personnel oversaw the installation of four injection wells IW-1 through IW-4 on the Caribbean House Apartments property to address remaining dissolved-phase and soil bound hydrocarbon impacts.

1.3.17 APRIL 2016 – HYDROGEN PEROXIDE INJECTION

In April 2016, Innovex contracted In-Situ Oxidative Technologies, Inc. (Isotec) to conduct injection of stabilized hydrogen peroxide in injection wells IW-1 through IW-4. On April 19, 2016, injection well IW-2 received 50 gallons of ferrous iron catalyst followed by 50 gallons of stabilized hydrogen peroxide. While preparing for injection in IW-1 Innovex measured and confirmed the presence of approximately 0.25 inches of LNAPL in IW-1. Injections were stopped due to health and safety concerns associated with hydrogen peroxide application into free LNAPL.

1.3.18 JULY 2017 – VAPOR INTRUSION EVALUATION

In February and June 2017, PBS Engineering and Environmental Inc. (PBS) conducted a vapor intrusion evaluation at the Caribbean House Apartments property to determine whether petroleum contamination

associated with the Site has the potential to adversely affect indoor air at the Apartments. Three vapor probes (SV-1 through SV-3) were installed along the north and east sides of the building. Vapor sampling was conducted on February 14, 2017. During this event, SV-2 and SV-3 contained water and were therefore unable to be sampled. The vapor sample from SV-1 contained naphthalene above the Ecology Screening Level (ESL). A second soil vapor sampling event was conducted on June 23, 2017 during which SV-3 still contained water. Samples were collected from SV-1 and SV-2, both of which contained naphthalene above the ESL. Additional information pertaining to this investigation was reported in PBS's Vapor Intrusion Evaluation dated July 2017.

1.3.19 NOVEMBER 2017 – VAPOR INTRUSION AND INDOOR QUALITY INVESTIGATION

In October 2017, PBS conducted a vapor intrusion and limited indoor air quality investigation at the Caribbean House Apartments to determine if indoor air had been affected by soil vapor intrusion. Indoor and outdoor air samples were collected over 8-hour sampling intervals to compare indoor air to ambient air conditions. No volatile organic compounds (VOC) concentrations exceeded the California Office of Environmental Health Hazard Assessments reference exposure levels adopted by PBS as the most protective cleanup standards for residential receptors. Additional information pertaining to this investigation was reported in PBS's Vapor Intrusion and Indoor Air Quality Investigation dated November 17, 2017.

1.3.20 DECEMBER 2018 – ORPHAN TANK DECOMMISSIONING

On December 12, 2018, Antea Group was notified of the presence of an unknown oily substance in an open trench cut at ARCO facility 980. Upon arrival at the site, Antea Group personnel observed the accumulated fluid and collected a sample for profiling. Laboratory analysis identified the fluid as a light, oil-range petroleum product with a chromatogram characteristic of transmission or hydraulic fluid. Between December 12 and 18, 2018, a previously unidentified 140-gallon oil tank was discovered and removed from the Site. Approximately 175 gallons of a mixture of oil, stormwater, sludge, soil, and rinse water was removed from the tank prior to removal from the ground on December 18, 2018. An area approximately 8 feet wide, 8 feet long, and 6 feet deep was excavated from around the tank to remove petroleum impacted soil. Soil samples contained petroleum hydrocarbon impacts in excess of the MTCA Method A Cleanup Levels. On January 2 and 3, 2019, additional soil was removed to extend each sidewall 3 to 4 feet beyond the prior limit and an additional 1 foot of soil was removed from the bottom of the excavation. Following removal of additional soil from the sidewalls, soil samples collected from the north, south and east sidewalls still contained petroleum hydrocarbon impacts in excess of the respective MTCA Method A Cleanup Levels. Due to the limits imposed by buried utilities and fuel dispensers in the area, no additional soil was removed. Additional information pertaining to this investigation was reported in Antea Group's Underground Storage Tank Removal Report dated May 13, 2019.

1.3.21 NOVEMBER 2018 AND JANUARY 2019 – VAPOR PROBE INSTALLATION AND NEAR-SLAB SOIL VAPOR SAMPLING

Antea Group oversaw the installation of four soil borings to depths between 5 and 8.25 feet bgs using a hand auger and subsequently completing them as soil vapor probes on November 11 and November 27, 2018. Soil samples were collected at approximately 5 feet bgs in borings SB-1 and SB-2; 5 feet and 8 feet in SB-3; and 3 feet and 4.5 feet in SB-4. Laboratory analytical results did not indicate petroleum hydrocarbons in excess of MTCA Method A Cleanup Levels. Well screen intervals were positioned from 5.5 to 6 feet bgs in SG-1, from 5 to 5.5 feet bgs in SG-2, from 7.75 to 8.25 feet bgs in SG-3, and 4.5 to 5 feet bgs in SG-4. The depth to groundwater has historically ranged from 12.36 to 18.83 feet bgs in the vicinity of SG-1, from 8.65 to 21.82 in the vicinity of SG-2 and SG-3, and from 5.54 to 17.30 feet bgs in the vicinity of SG-4. The soil vapor probes were constructed in accordance with the provisions set forth in the Petroleum Vapor Intrusion Guidance Document prepared by The Interstate Technology & Regulatory Council (ITRC) Petroleum Vapor Intrusion Team, dated October 2014.

Following vapor probe installation, soil vapor conditions were allowed to equilibrate for more than one month before sampling. Antea Group conducted seasonal soil vapor sampling from vapor probes SG-1 and SG-4 on January 15, 2019 and SG-2 on January 30, 2019. A soil vapor sample was not collected from SB-3 due to the presence of water. Laboratory analytical results indicated concentrations of BTEX, MTBE, naphthalene, and hexane were not detected in excess of Washington State ESLs in any of the samples collected. A second round of soil vapor sampling was completed on August 27, 2019 and samples were collected from SG-1, SG-2, SG-3, and SG-4. Laboratory analytical results indicated concentrations of BTEX, MTBE, naphthalene, and hexane were not detected in excess of Washington State ESLs in any of the samples collected. Additional information pertaining to this investigation was reported in Antea Group's Soil Vapor Probe Installation and Soil Vapor Sampling Report dated January 7, 2020.

1.3.22 SEPTEMBER 2019 – SITE INVESTIGATION

On September 9th and 10th, 2019 Antea Group oversaw the installation of four soil borings converted to permanent monitoring wells MW-13, MW-14, MW-15, and MW-16. Soil samples collected from MW-13 at 8, 10, and 14 feet bgs exceeded the TPH-G MTCA Method A Cleanup Level at concentrations of 930 milligrams per kilogram (mg/kg), 340 mg/kg, and 120 mg/kg, respectively. The soil sample collected from MW-15 at 5 feet bgs contained a total concentration of combined carcinogenic PAHs of 0.17385 mg/kg. Under WAC 173-340-708(8), Toxicity Equivalency Factors (TEF) are defined to establish Cleanup Levels for carcinogenic PAHs. When PAH concentrations are corrected for toxicity, the total concentration of combined carcinogenic PAHs is 0.03567, which is below the MTCA Method A Cleanup Level for combined carcinogenic PAHs. All other soil samples collected from MW-13, MW-14, MW-15, and MW-16 did not exceed MTCA Method A Cleanup Levels for benzene, TPH-G, TPH-D, or total petroleum hydrocarbons as oil (TPH-O). Groundwater analytical results from MW-13, MW-15, and MW-16 exceeded MTCA Method A Levels for one or more of the following; benzene, TPH-G, TPH-D, or TPH-O. Additional information pertaining to this investigation was reported in Antea Group's Subsurface Investigation Report dated November 18, 2019.

1.3.23 SEPTEMBER 2020 – SUBSURFACE INVESTIGATION

In November 2020, two soil borings were advanced at the Caribbean Apartments property and one soil boring was advanced on the property southeast of the Caribbean Apartments building. The three borings were completed as groundwater monitoring wells (MW-17, MW-18, and MW-19). A total of 10 soil samples were submitted to Eurofins-TestAmerica for quantitative chemical analysis. Laboratory analytical results indicated that concentrations of petroleum hydrocarbons were not detected above laboratory method reporting limits and/or MTCA Method A Cleanup Levels in any of the samples collected. Groundwater was sampled from the new monitoring wells MW-17, MW-18, and MW-19 on December 14, 2020. All samples were submitted to Eurofins-TestAmerica for quantitative chemical analysis. None of the December 2020 groundwater samples submitted for analysis contained hydrocarbon concentrations in excess of laboratory method reporting limits and/or MTCA Method A Cleanup Levels. Additional information pertaining to this investigation was reported in Antea Group's Subsurface Investigation Report dated February 19, 2021.

1.4 CURRENT SITE STATUS

The Site is listed on Ecology's Leaking Underground Storage Tanks (LUST) list with facility site ID 68996432. The Site was enrolled in Ecology's Voluntary Cleanup Program (VCP) with VCP ID NW2729 but was subsequently terminated from the program in February 2017. All remedial activities are currently being conducted as an independent cleanup action outside of the VCP. The current status on Ecology's database is "Cleanup Started". There are currently eight monitoring wells on the ARCO property and thirteen monitoring wells on or surrounding the Caribbean Apartments property. Currently, monitoring wells MW-4, MW-11, MW-12, MW-13,

MW-15, and B1(JPHC) are sampled on a semi-annual basis. The new monitoring wells MW-20 and MW-21 will be added to the semi-annual groundwater monitoring schedule. A PetroFix™ amendment pilot study was conducted in November 2021 and post-injection performance sampling is being conducted on wells MW-10, MW-12, MW-13, MW-15, MW-19, and B1(JPHC) on a quarterly basis.

2.0 PROJECT ACTIVITIES

2.1 DRILLING AND SOIL SAMPLING

The subsurface investigation included advancing two soil borings to a maximum depth of 25 feet bgs. The two borings were completed as groundwater monitoring wells MW-20 and MW-21. The soil borings and monitoring well locations are presented on Figure 3.

Cascade Drilling, Inc. (Cascade), of Tacoma, Washington completed the borings and well installation activities in September 2021. Cascade began borehole clearance on September 9, 2021, using a vacuum truck and air-knife to clear each boring to a minimum depth of 6.5 feet bgs. Air-knife and vacuum truck operations were ceased at 3.5 feet bgs at MW-20 and a soil sample was collected utilizing a hand auger that was advanced into the undisturbed soil 18 inches ahead of the pre-cleared boring. The hand auger was washed with soap and water followed by a clean water rinse prior to use.

On September 10, 2021, drilling activities began at monitoring well MW-20 followed by MW-21 using a sonic drill rig. Soil samples were collected from each boring using a 6-inch diameter core barrel advanced ahead of the drill casing to collect continuous core soil samples. Soil samples were transferred from the core barrel to clean, single-use plastic bags for observation and collection of laboratory samples. Drill casing and sample barrels were decontaminated using detergent and a water pressure washer between boring locations.

Soil samples were collected to characterize subsurface lithology and to provide samples for chemical analyses. Antea Group personnel observed and logged the borings using the Unified Soil Classification System. After collection, each soil sample was field screened for the presence of volatile organic compounds with a photoionization detector (PID) to aid in the selection of representative soil samples for chemical analysis. Discrete soil samples were collected for analytical testing based on depth, indications of petroleum contamination, and moisture content. A total of 5 soil samples were submitted to Eurofins-TestAmerica Laboratory (Eurofins-TestAmerica) in Tacoma, Washington for quantitative chemical analysis following standard chain-of-custody procedures.

The field procedures used during the investigation are provided in Appendix A. Boring logs describing soil horizons, sample recovery, PID screening values, and well completion details are presented in Appendix B.

2.2 MONITORING WELL COMPLETION

Monitoring wells MW-20 and MW-21 were constructed of 2-inch diameter schedule 40 PVC with 0.010-inch slotted screen. The screened interval of monitoring wells MW-20 and MW-21 were 10 to 25 feet bgs and 5 to 20 feet bgs, respectively. The annular space of the borings was filled with sand to approximately 2 feet above the screen, followed by a hydrated bentonite chip seal to approximately 18 inches bgs. Each well was completed to ground surface with concrete from the top of the bentonite seal and a flush-mounted well monument.

2.3 WELL DEVELOPMENT AND SURVEYING

On September 15, 2021, monitoring wells MW-20 and MW-21 were developed to remove fine grained sediments from the sand filter pack. Development was conducted using dedicated single use bailers to remove a minimum of ten casing volumes or until the groundwater from the monitoring well ran clear. On November 5, 2021, the top of casing (TOC) for both wells were surveyed relative to an existing Site monitoring well. Elevations were surveyed to the nearest 0.01 foot.

2.4 ON-SITE CONTAINMENT OF DRILL CUTTINGS AND DECONTAMINATION WATER

Soil cuttings and decontamination water generated from the subsurface investigation were properly labeled, sealed, and temporarily stored in 55-gallon drums onsite. On October 14, 2021, an Antea Group representative met ACTenviro personnel onsite for removal of the investigation derived waste. The drums were transported by ACTenviro to Clean Earth of Kent, WA for treatment and disposal of the soil cuttings and decontamination water. The soil and decontamination water disposal documents are included in Appendix C.

2.5 GROUNDWATER SAMPLING

On September 28, 2021, Antea Group collected groundwater samples from the newly installed monitoring wells MW-20 and MW-21. Prior to sampling, groundwater levels were measured using an oil/water interface probe. Groundwater samples were collected using low-flow sampling methods. The samples were collected using a peristaltic pump and dedicated LDPE and silicone tubing for purging while collecting water quality readings and samples from each well. Water quality readings were collected for each well by pumping water through a flow-through cell of a water quality meter at a rate of less than 1 liter per minute. Measurements are recorded for temperature, electrical conductivity, pH, oxidation reduction potential (ORP), dissolved oxygen (DO), turbidity, and/or total dissolved solids (TDS) at 3 to 5-minute intervals until each parameter stabilized. The flow-through cell was disconnected from the pump tubing and samples for laboratory analysis were collected directly from the tubing. The groundwater samples were submitted to Eurofins-TestAmerica for quantitative chemical analysis in accordance with standard chain-of-custody procedures.

3.0 PROJECT RESULTS

3.1 SITE GEOLOGY AND HYDROGEOLOGY

The area is in the Puget Sound Lowland geomorphic province, which consists mainly of glacially-deposited sediments. The Puget Sound Lowland is a basin lying between the Cascade Mountains to the east and the Olympic Mountains (coastal range) to the west. At least five major advances of continental glacial ice have been identified as having occurred in the Puget Sound Lowlands. Geologic units resulting from these glacial events include complex sequences of lacustrine deposits, advance outwash, glaciomarine drift, till, and recessional outwash. More recent erosional processes have deposited alluvial sand and gravel, primarily along river valleys. The Site vicinity is underlain by Alderwood Soils, which is a Quaternary stratified sequence consisting of sandy loam with varying amounts of gravel. In addition, Alderwood soils are considered hydrologically as Class C, which indicates slow infiltration rates with layers impeding downward movement of water, or soils with moderately fine or fine textures. Soils observed at the Site during previous investigations include dense to very dense silty sand, sand, gravelly sand, and sandy gravel.

3.2 SUBSURFACE LITHOLOGIC CONDITIONS

Soils encountered during this investigation consisted of silty sand and very fine to very coarse sand with some mixtures containing cobbles and gravels. Moist to wet soils were encountered beginning at depths between 3 and 20 feet bgs. Detailed soil descriptions are presented in the boring logs in Appendix B.

3.3 QUANTITATIVE CHEMICAL ANALYSIS

3.3.1 SOIL ANALYTICAL

Soil samples were analyzed for the presence of the following constituents:

- BTEX by EPA Method 8260B;
- MTBE and n-hexane by EPA Method 8260B;
- TPH-G by Northwest Method NWTPH-Gx;
- TPH-D and TPH-O by Northwest Method NWTPH-Dx;
- Naphthalenes SIM 8270; and
- Total lead using EPA 6000/7000 Series Methods.

Quantitative laboratory analysis from the September 2021 drilling event indicated that concentrations of the analyzed constituents were not detected above MTCA Method A Cleanup Levels in any of the samples collected.

Soil analytical results are summarized in Table 1. The Soil Analytical Data Map is presented on Figure 3. A copy of the Soil Laboratory Analytical Report is included in Appendix D.

3.3.2 GROUNDWATER ANALYTICAL

Groundwater samples were analyzed for the presence of the following constituents:

- BTEX by EPA Method 8260B;
- MTBE and n-hexane by EPA Method 8260B;
- TPH-G by Northwest Method NWTPH-Gx;
- TPH-D and TPH-O by Northwest Method NWTPH-Dx;
- Total and dissolved lead (groundwater only) using EPA 6000/7000 Series Methods

Quantitative laboratory analysis from the September 28, 2021 sampling event indicated TPH-O concentrations in excess of MTCA Method A Cleanup Levels were present in groundwater samples collected from the newly installed well MW-21. Groundwater sampled from monitoring well MW-20 did not contain concentrations of analyzed constituents above MTCA Method A Cleanup Levels.

The groundwater elevation data is summarized in Table 2, groundwater analytical data is summarized in Table 3, and the Groundwater Elevation and Analytical Data Map is presented on Figure 4. A copy of the Groundwater Laboratory Analytical Report is included in Appendix E.

4.0 SUMMARY

In September 2021, two borings were completed as groundwater monitoring wells (MW-20 and MW-21). Both monitoring wells were constructed with a 2-inch diameter schedule 40 PVC well casing. A total of 5 soil samples were submitted to Eurofins-TestAmerica for quantitative chemical analysis. Laboratory analytical results indicated that concentrations of petroleum hydrocarbons were not detected above MTCA Method A Cleanup Levels in any of the samples collected. Groundwater was sampled from the new monitoring wells MW-20 and

MW-21 on September 28, 2021. All samples were submitted to Eurofins-TestAmerica for quantitative chemical analysis. Quantitative laboratory analysis indicated TPH-O concentrations in excess of MTCA Method A Cleanup Levels were present in groundwater samples collected from the newly installed well MW-21. Groundwater sampled from monitoring well MW-20 did not contain concentrations of analyzed constituents above MTCA Method A Cleanup Levels.

5.0 REMARKS

The recommendations contained in this report represent Antea USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Antea USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea USA, Inc.'s client and anyone else specifically identified in writing by Antea USA, Inc. as a user of this report. Antea USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea USA, Inc. makes no express or implied warranty as to the contents of this report.

Prepared by

Samantha Hinze

Date: January 14, 2022

Samantha Hinze
Staff Professional

Reviewed by:

State of Washington 3157 Licensed Geologist MEGAN RICHARD

Date: January 14, 2022

Megan Richard, LG
Senior Project Manager

cc: VCP Coordinator, Department of Ecology, Northwest Regional Office (1-Hardcopy, Electronic Copy)
Mr. Michael Dahlstrom, Owner - Caribbean Apartments (Electronic Copy)
Mr. Joshua Pope, Montgomery Purdue Blankinship & Austin, PPLC (Electronic Copy)
Mr. Enjay Santos and Ms. Erica Knauf Santos, Knauf Santos Law (Electronic Copy)
Mr. Wade Melton, Remediation Management Service Company (Electronic Copy – RMO Upload File, Antea Group

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7.0 REFERENCES

Geraghty & Miller. 1989. “Preliminary Subsurface Investigation Report”. October 25.
Geraghty & Miller. 1991. “Underground Storage Tank Removal Report”. August 7.
Tracer Research Corporation. 1992. “Shallow Soil Gas Investigation”. April 13.
Geraghty & Miller. 1993. “Site Characterization”. January 28.
Geraghty & Miller. 1993. “Additional Site Characterization and Soil Vapor Extraction Field Testing Report”. July 12.
James P Hurley and Company. 1993. “Phase II Environmental Site Assessment Report”. November 20.
Geraghty & Miller. 1994. “Off-Site Assessment”. July 7.
Delta Environmental Consultants. 1995. “Air Sparging Pilot Test Report”. November 8.
Delta Environmental Consultants. 1996. “Offsite Assess Activities Report”. July.
Delta Environmental Consultants. 2008. “Remediation System Installation Report”. April 11.
Vapor Intrusion Evaluation PBS Engineering and Environmental Inc July 2017
PBS Engineering and Environmental Inc. 2017. ”Vapor Intrusion and Indoor Air Quality Investigation”. November 17.
Antea Group. 2019. “Underground Storage Tank Removal Report”. May 13.
Antea Group. 2020. ”Soil Vapor Probe Installation and Soil Vapor Sampling Report”. January 7.
Antea Group. 2019. ”Subsurface Investigation Report”. November 18.

Tables

Table 1 - Soil Analytical Data

Table 2 - Groundwater Gauging Data

Table 3 - Groundwater Analytical Data

Table 1
Soil Analytical Data
ARCO Facility 980
10822 Rosevelt Way NE, Seattle, WA 98125

CONSTITUENT	CONSTITUENT	CONSTITUENT	Benzene	Toluene	Ethylbenzene	Xylene (Total)	Methyl-tertiary-butyl ether	Gasoline Range Organics	Diesel Range Organics	Oil-Range Organics	Naphthalene	Lead
		UNIT	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
MTCA_METHOD_A_SOIL			**0.03**	**7**	**6**	**9**	**0.1**	**30**	**2000**	**2000**	**5**	**250**
Well ID	Date	Depth (ft)	--	--	--	--	--	--	--	--	--	--
MW-21	9/9/2021	5.2	< 0.0018*-	< 0.0088	< 0.0018*-	< 0.0132*-	< 0.0018	< 4.7	100	790	0.13	66
MW-21	9/10/2021	10	< 0.0014*-	< 0.0072	< 0.0014*-	< 0.0108*-	< 0.0014	< 4.4	< 56	< 56	<0.0053	1.3
MW-21	9/10/2021	15	< 0.0017*-	< 0.0083	< 0.0017*-	< 0.0124*-	< 0.0017	15	< 53	< 53	<0.0052	1.4
MW-21	9/10/2021	20	< 0.0016*-	< 0.0078	< 0.0016*-	< 0.0117*-	< 0.0016	< 4.4	< 53	< 53	<0.0051	1.1
MW-21	9/10/2021	25	< 0.0016*-	< 0.0082	< 0.0016*-	< 0.0123*-	< 0.0016	< 5.0	< 54	< 54	<0.0052	1.5

NOTES:
Results in bold exceed applicable action limits
mg/kg = milligrams/kilogram
-- = No information available
< = Not detected at or above indicated laboratory reporting limit
*- = LCS and/or LCSD is outside acceptance limits, low biased.

Table 2
Groundwater Gauging Data
ARCO Facility 980
10822 Rosevelt Way NE, Seattle, WA 98125

Well I.D.	Date	GROUNDWATER ELEVATION DATA					
		TOC Elevation (ft)	Water Level Depth (ft)	LNAPL Depth (ft)	LNAPL Thickness (ft)	Water Level Elevation* (ft)	Qualifiers
MW-20	9/28/2021	261.36	16.42	NP	--	244.94	--
MW-21	9/28/2021	261.26	10.83	NP	--	250.43	--

Notes:
TOC - Top of Casing
ft - feet
NP - No Product
LNAPL - Light Non-Aqueous Phase Liquid
* - Corrected for LNAPL if present (assumes LNAPL specific gravity = 0.75)
-- No Information Available

Table 2
Groundwater Analytical Data
ARCO Facility 980
10822 Rosevelt Way NE, Seattle, WA 98125

CONSTITUENT		B	T	E	X	MTBE	TPH-G	TPH-D	TPH-O	Total Lead	Dissolved Lead
UNIT		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MTCA METHOD A CLEANUP LEVELS		**5**	**1000**	**700**	**1000**	**20**	**800**	**500**	**500**	**15**	**15**
Well ID	Date										
MW-20	9/28/2021	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 250	160	390 *+	< 2.0	< 2.0
MW-21	9/28/2021	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 250	350	**510 *+**	< 2.0	< 2.0

Notes:

B = Benzene

T = Toluene

E = Ethylbenzene

X = Xylenes, Total

MTBE = Methyl-tertiary-butyl ether

TPH-G = Total petroleum hydrocarbons as gasoline by Northwest Method NWTPH-Gx

TPH-D = Total petroleum hydrocarbons as diesel by Northwest Method NWTPH-Dx

TPH-O = Total petroleum hydrocarbons as oil by Northwest Method NWTPH-Dx

1,000/800[1] ug/L if no detectable levels of Benzene in the sample - otherwise 800 ug/L

<1.0 = Concentrations were not detected above the laboratory method reporting limit.

ug/L = Micrograms per liter (ppb)

MTCA = Model Toxics Control Act

Results in **bold** indicate concentrations in excess of MTCA Method A Cleanup Levels

* = LCS or LCSD is outside acceptance limits

*1 = LCS/LCSD RPD exceeds control limits.

Y = The chromatographic response resembles a typical fuel pattern.

J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

B = Compound was found in the blank and sample.

H & H1 = Sample was prepped or analyzed beyond the specific holding time

F1 = MS and/or MSD Recovery is outside acceptance limits.

F2 = MS/MSD RPD exceeds control limits.

^ = Re-extraction and re-analysis of samples was performed beyond the specified holding time as the LCS or LCSD exceeded control limits and the compound was found in the blank and sample.

D = The reported result is from a dilution.

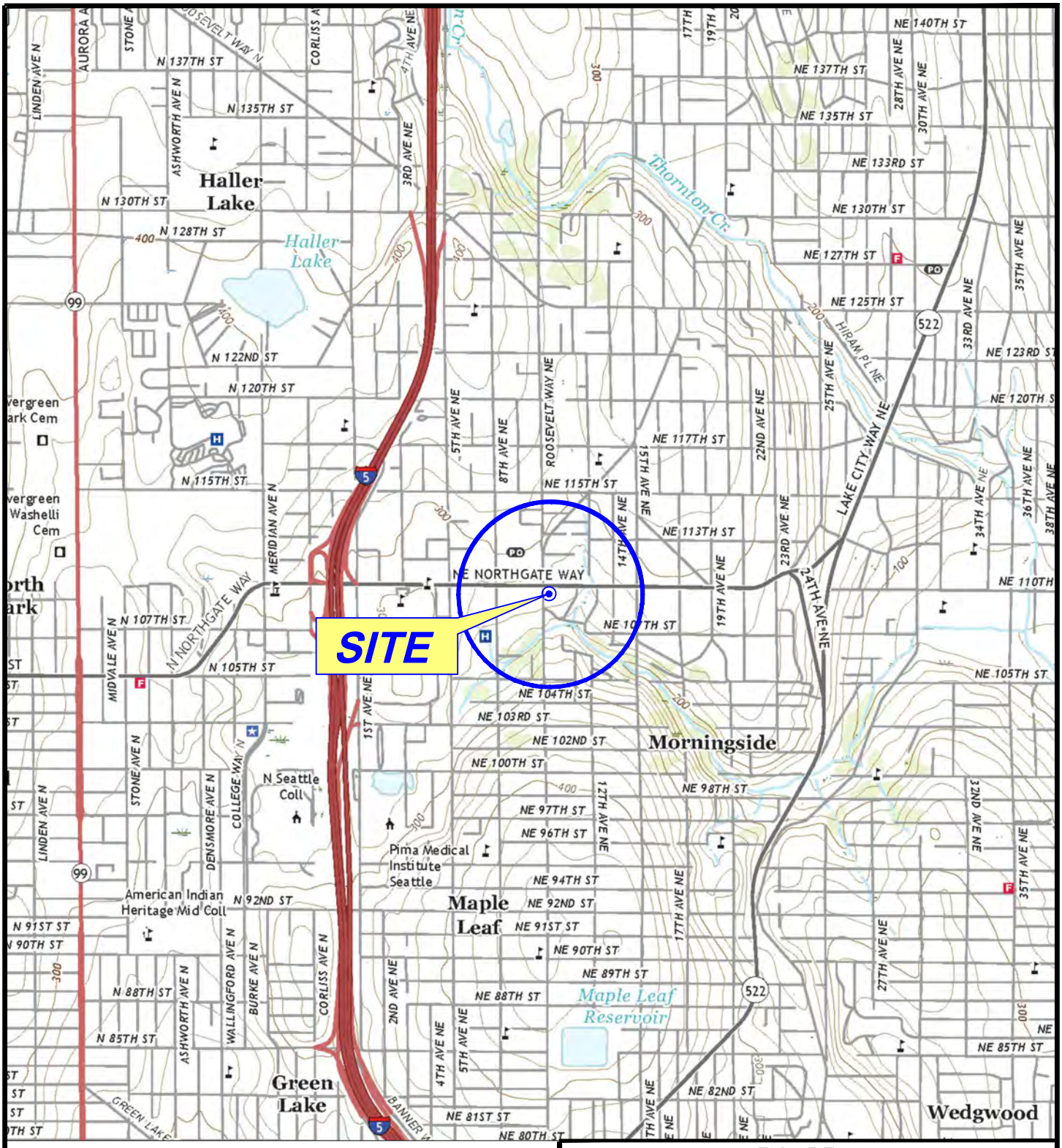
Figures

Figure 1 - Site Location Map

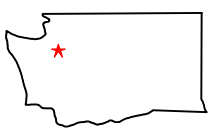
Figure 2 - Site Aerial Map

Figure 3 - Soil Analytical Data Map

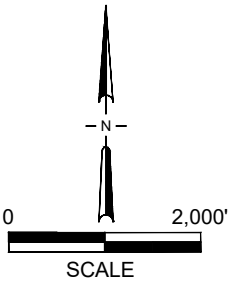
Figure 4 - Groundwater Elevation and Analytical Data Map



GENERAL NOTES:
BASE MAP FROM TOPO!
SEATTLE NORTH E., WA. QUADRANGLE
7.5 MINUTE TOPOGRAPHIC MAP



QUADRANGLE LOCATION



SCALE

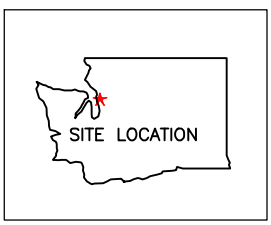
FIGURE 1
SITE LOCATION MAP

ARCO FACILITY NO. 980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO. 00980SA201		DRAWN BY J. HIGHFILL	
FILE NO. 0980-SLM18		PREPARED BY M. BERNARD	
DATE 12 Dec 18	REV. 0	REVIEWED BY	

antea group

GENERAL NOTES:
BASE MAP FROM GOOGLE EARTH 2018



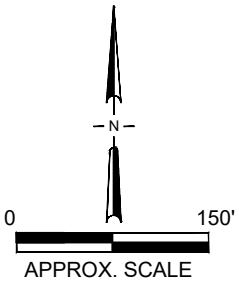
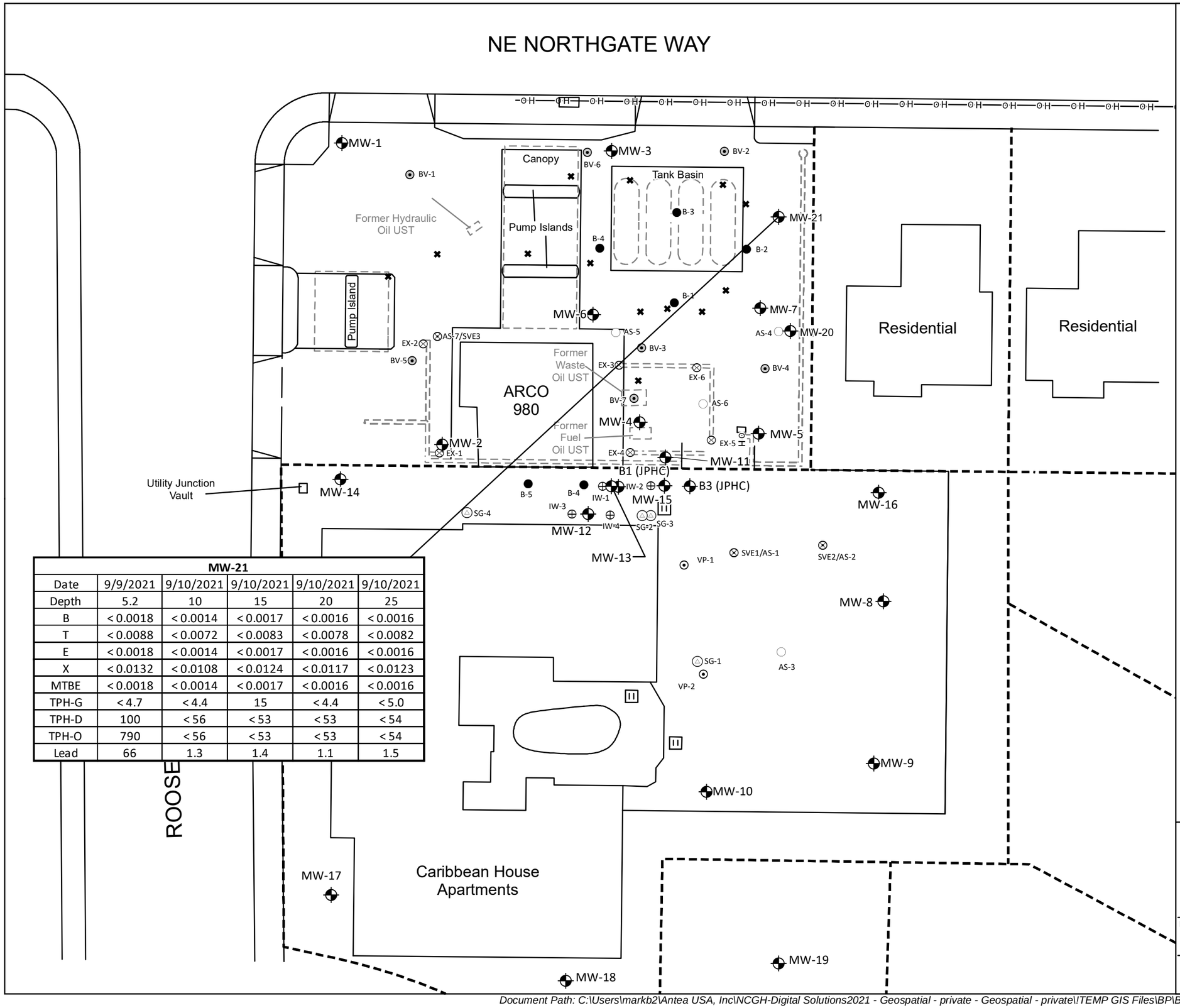


FIGURE 2
SITE AERIAL MAP

ARCO FACILITY NO. 0980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO. 00980SA201	DRAWN BY J. HIGHFILL	
FILE NO. 980G-SAM18	PREPARED BY M. BERNARD	
DATE 12 DEC 18 / REV. 1	REVIEWED BY	

antea group



MW-21

Date	9/9/2021	9/10/2021	9/10/2021	9/10/2021	9/10/2021
Depth	5.2	10	15	20	25
B	< 0.0018	< 0.0014	< 0.0017	< 0.0016	< 0.0016
T	< 0.0088	< 0.0072	< 0.0083	< 0.0078	< 0.0082
E	< 0.0018	< 0.0014	< 0.0017	< 0.0016	< 0.0016
X	< 0.0132	< 0.0108	< 0.0124	< 0.0117	< 0.0123
MTBE	< 0.0018	< 0.0014	< 0.0017	< 0.0016	< 0.0016
TPH-G	< 4.7	< 4.4	15	< 4.4	< 5.0
TPH-D	100	< 56	< 53	< 53	< 54
TPH-O	790	< 56	< 53	< 53	< 54
Lead	66	1.3	1.4	1.1	1.5

LEGEND

- GROUNDWATER MONITORING WELL
- AIR SPARGING WELL LOCATION
- EXTRACTION WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- INJECTION WELL LOCATION INSTALLED BY INNOVEX
- SOIL VAPOR EXTRACTION / VACUUM PRESSURE MONITORING POINT
- BIOVENTING WELL LOCATION
- SOIL GAS PROBE LOCATION
- SOIL BORING LOCATION
- SOIL SAMPLING LOCATION
- PROPERTY BOUNDARY
- SITE FEATURES
- FORMER SITE FEATURES
- OVERHEAD UTILITY LINES
- CATCH BASIN

MW-21	Well ID
Date	Sample Date
Depth	Sample Depth (ft)
B	Benzene
T	Toluene
E	Ethybenzene
X	Total Xylenes
MTBE	Methyl-tert-butyl ether
TPH-G	Total Petroleum Hydrocarbons as Gasoline
TPH-D	Total Petroleum Hydrocarbons as Diesel
TPH-O	Total Petroleum Hydrocarbons as Oil
Lead	Lead

Results in bold exceed applicable action limits
All results given in milligrams per kilograms (mg/kg)
NA = No information available
< = Not detected at or above indicated laboratory reporting limit

0 5 10 20 30 40 Feet

N

FIGURE 3
Soil Analytical Data Map
SEPTEMBER 9-10, 2021 ARCO FACILITY
NO. 980 10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO.	PREPARED BY	REF SCALE
WA-00980 Seattle	*JJ/MB*	*1:360*
DATE	REVIEWED BY	MAP SCALE
1/12/2022	*MR*	*1 inch = 30 feet*

anteagroup

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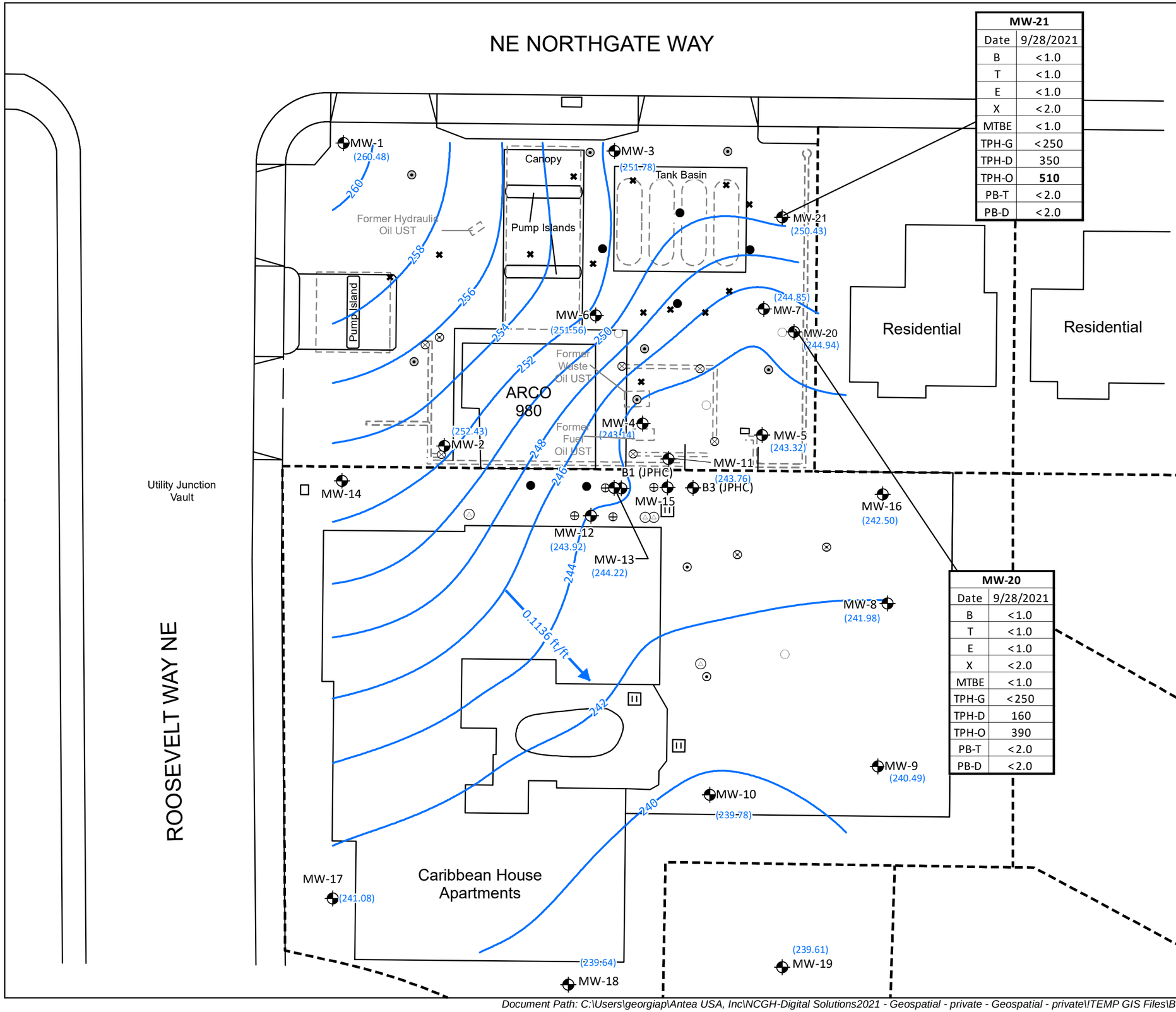


FIGURE 4

GROUNDWATER ANALYTICAL AND ELEVATION CONTOUR MAP
SEPTEMBER 28, 2021
ARCO FACILITY NO. 980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO.	PREPARED BY	REF SCALE
WA – 00980 Seattle	MB/GP	1:360
DATE	REVIEWED BY	MAP SCALE
1/14/2022	MR	1 inch = 30 feet

antea group

Document Path: C:\Users\georgiap\Antea USA, Inc\NCGH-Digital Solutions2021 - Geospatial - private - Geospatial - private\!TEMP GIS Files\BP\BP_WA\980 Seattle- CROSS CHECK CAD FILE\Layout\GWEAnalytical3Q21.mxd

Appendix A - Summary of Field Procedures and Quality Assurance Plan

FIELD PROCEDURES

The boring locations were marked, and the Utility Underground Location Center was contacted at least 72 hours before the Site walk was scheduled. A Site walk was conducted to visually inspect utility markers and indicators. Applied Professional Services, Inc. (APS) of North Bend, Washington was utilized to identify private subsurface utilities. APS swept a search zone of 15 feet in all directions surrounding the proposed boring locations. APS uses Metrotech 810 multi-frequency locators to identify conductive subsurface utilities. All utilities were marked in paint and recorded on a drawing/plot plan.

Prior to drilling, each boring location was cleared to a depth of at least 6.5 feet below ground surface (bgs) and 120 percent of the drilling tool diameter with an airknife, vacuum truck, and/or hand auger. Following utility clearing, all borings were advanced using a track-mounted sonic drill rig operated by Cascade Drilling, Inc. (Cascade). Discrete soil samples were collected from each boring to characterize site soils with respect to petroleum hydrocarbon impacts.

For shallow soil samples collected during borehole pre-clearance, Cascade would cease air knife and vacuum truck operations 1.5 feet above the desired sample depth, and a hand auger would be used to extend the boring to the desired depth. The hand auger was decontaminated between each sample. After collecting the shallow sample(s), Cascade continued to widen and clear the boring to 6.5 feet bgs. Soil samples at depths greater than 6.5 feet bgs were collected using a 4-inch diameter core barrel advanced ahead of the drill casing in order to continuously collect soils samples. Soil samples were transferred from the core barrel to clean, single-use plastic sleeves for observation and collection of laboratory samples.

Soil samples were collected directly from the hand auger and sample sleeves using a single-use syringe sampler and placed into laboratory-supplied 40-milliliter (mL) VOA vials preserved with methanol in accordance with Environmental Protection Agency (EPA) Method 5035A. Additional soil was placed into 4 to 8-ounce laboratory-supplied glass soil jars. The samples were labeled and immediately placed in cold storage until submitted to the laboratory for analysis. The samples were transported to Test America Laboratories, Inc. (Test America) for quantitative chemical analysis following chain-of-custody documentation.

After sample collection, soil was field screened for the presence of volatile organic compounds with a photoionization detector (PID) to aid in the facilitation of selecting representative soil samples for chemical analysis. The PID was a RAE Systems MiniRAE 3000 PID equipped with a 10.6 electron volt (eV) ultraviolet (UV) lamp and calibrated to a 100-ppm isobutylene calibration gas for direct readings in parts per million (ppm). The operating range of the detector is from 0 to 15,000 parts per million with a minimum detection limit of 0.1 ppm. It should be noted that the PID measurements are considered semi-quantitative data since the instrument detects all organic compounds with ionization potentials less than 10.2 eV. Clear plastic bags were filled to one-third to half capacity and then sealed. Soils in the bags were gently agitated to facilitate the breakup of any lumps and allowed to sit for approximately 10 minutes prior to analyzing the air above the soil in the bag. The PID probe was inserted into an opening of the plastic bag and the maximum vapor concentration was recorded for each soil sample collected.

ANALYTICAL METHODS

SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES

Sample identification and chain-of-custody procedures ensure sample integrity and document sample possession from the time of collection to delivery to the laboratory. Each sample submitted for analysis was labeled and identified with the project number, date and time of sample collection, sampler, and sample number unique to the sample. This information, in addition to any field measurements, noted names of on-site personnel, and any other pertinent field observations were recorded in the field notes.

Upon arrival at the laboratory, the sample control personnel at the laboratory verified sample integrity and confirmed that the sample was collected in the proper container, packaged correctly, and that there was adequate volume of sample for the required analyses. The laboratory assigned a unique log number for identification of each sample throughout analyses and reporting. The log number was recorded on the chain of custody form and in the legally required logbook maintained in the laboratory. The sample description, date received, client name, and any other relevant information was recorded.

ANALYTICAL QUALITY ASSURANCE

In addition to routine calibration of the analytical instruments with standards and blanks, the analyst is required to run duplicates and spikes on 10 percent of the analyses to insure an added measure of precision and accuracy. Accuracy is also verified through the following:

- U.S. Environmental Protection Agency (EPA) and State certification programs.
- Participation in an inter-laboratory or "round-robin" quality assurance program.
- Verification of results with an alternative method. For example, calcium may be determined by atomic absorption, ion chromatography, or titrimetric methods.

ANALYTICAL METHODS

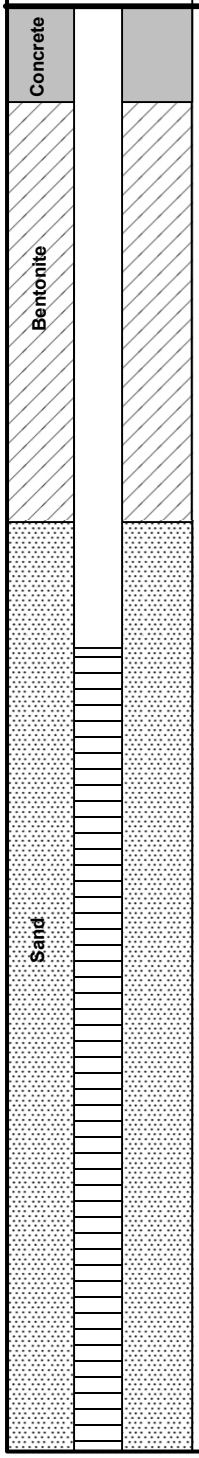
The analytical tests performed for this evaluation were chosen based upon standard requirements issued by the Washington State Department of Ecology. Select soil and groundwater samples collected during this investigation were analyzed by the following methods:

- Benzene, toluene, ethyl benzene, xylenes (BTEX), methyl tert-butyl ether (MTBE), 1,2-Dibromoethane (EDB), and 1,2-Dichloroethane (EDC) by Environmental Protection Agency (EPA) Method 8260B/C;
- Total petroleum hydrocarbons as gasoline (TPH-G) by Northwest Method NWTPH-Gx;
- Total petroleum hydrocarbons as diesel (TPH-D) and total petroleum hydrocarbons as oil (TPH-O) by Northwest Method NWTPH-Dx;
- Total lead using EPA Method 6020A;
- Groundwater samples were analyzed for EDB by EPA method 8011;
- RCRA 8 Metals by EPA Method 6020A and EPA Method 7470A for waste disposal characterization purposes.

Appendix B - Boring Logs

	WELL/BORING: MW-20	Unique Ecology Well ID: BMM 880
	INSTALLATION DATE: 9/9-9/10/21	DRILLING METHOD: Sonic
	PROJECT: 00980SA211	SAMPLING METHOD: Continuous Core/HA
	CLIENT: BP	BORING DIAMETER: 6"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 25'
	CITY: Seattle	WELL CASING: SCH 40 PVC 2"
	STATE: WA	WELL SCREEN: 10–25' (0.010")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 8–25' (2 x 12)

CASING ELEVATION	261.36' DTC: -
SURVEY DATE:	11/5/21
DTW:	10.83'



DEPTH (FEET)	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: K. Younger/S. Hinze/N. Han
1										Surface = Concrete Fill material
2										
3										
4			-	0.0	-			SP		Gravelly SAND: brown; trace silt; 80% coarse sand; 15% fine to coarse gravel.
5										Large rock
6										
7										
8										
9										
10			-	0.0	-			SM		Silty SAND: grey; brown; silt/sand mixture with coarse gravel and cobbles.
11										
12										
13										
14										
15			-	0.0	-			SP		Gravelly SAND: green/gray; trace silt; majority poorly graded sand with some coarse gravel.
16										6' silt lens @~17'
17										
18										
19										
20			-	0.0	-			SP		Gravelly SAND: green/grey; trace silt; majority poorly graded sand with some coarse gravel.
21										6" silt; lens @~22'
22										

	WELL/BORING: MW-20	Unique Ecology Well ID: BMM 880
	INSTALLATION DATE: 9/9-9/10/21	DRILLING METHOD: Sonic
	PROJECT: 00980SA211	SAMPLING METHOD: Continuous Core/HA
	CLIENT: BP	BORING DIAMETER: 6"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 25'
	CITY: Seattle	WELL CASING: SCH 40 PVC 2"
	STATE: WA	WELL SCREEN: 10-25' (0.010)
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 8-25' (10X20)

CASING ELEVATION	261.36'	DTC: -
SURVEY DATE:	11/5/21	
DTW:	10.83'	

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: K. Younger/S. Hinze/N. Han
Sand			-	0.0	-	23			SP		Gravelly SAND: green/grey; trace silt; majority poorly graded sand with some coarse gravel.
						24					
						25					
						26					
						27					
						28					
						29					
						30					
						31					
						32					
						33					
						34					
						35					
						36					
						37					
						38					
						39					
						40					
						41					
						42					
						43					
						44					

antea group	WELL/BORING: MW-21	Unique Ecology Well ID: BMM 881
	INSTALLATION DATE: 9/9-9/10/21	DRILLING METHOD: Sonic
	PROJECT: 00980SA211	SAMPLING METHOD: Continuous Core/HA
	CLIENT: BP	BORING DIAMETER: 6"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 25'
	CITY: Seattle	WELL CASING: SCH 40 PVC 2"
	STATE: WA	WELL SCREEN: 5-20' (0.010")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 3-20' (2 x 12)

CASING ELEVATION	261.26'	DTC: -
SURVEY DATE:	11/5/21	
DTW:	16.42'	

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: K. Younger/S. Hinze/N. Han
Concrete						1					Surface = Asphalt Fill material
Bentonite						2					
						3					
			-	0.0	-	4			SP		Gravelly SAND: brown; 90% medium to coarse sand; 10% gravel.
			MST	-	-	5			SP		Same as Above: grey/brown.
						6					
						7					
			MST			8			OL		SILT: organic silts and organic silty clays.
						9					
				0.1	-				SM		Silty SAND: with gravel; yellow/grey; silty sand mixture with coarse gravel.
			WET			10					
Sand						11					
						12					
						13					
						14					
			WET	0.1	-	15			SW		Gravelly SAND: green/grey; well graded sand with fine gravel.
		▼				16					
						17					
						18					
						19					
			WET	3.1	-	20			SP		Gravelly SAND: with silt; green/grey; trace silt; poorly graded/ gravelly sand.
Bentonite						21					
						22					

	WELL/BORING: MW-21	Unique Ecology Well ID: BMM 881
	INSTALLATION DATE: 9/9-9/10/21	DRILLING METHOD: Sonic
	PROJECT: 00980SA211	SAMPLING METHOD: Continuous Core/HA
	CLIENT: BP	BORING DIAMETER: 6"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 25'
	CITY: Seattle	WELL CASING: SCH 40 PVC 2"
	STATE: WA	WELL SCREEN: 5-20' (0.010)
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 3-20' (10X20)

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: K. Younger/S. Hinze/N. Han
Bentonite			DMP	1.4	-	23			SC		Clayey SAND: with gravel and cobble; green/grey; 20% clay; 80% sand; trace coarse cobble and cobble.
						24					
						25					
						26					
						27					
						28					
						29					
						30					
						31					
						32					
						33					
						34					
						35					
						36					
						37					
						38					
						39					
						40					
						41					
						42					
						43					
						44					

CASING ELEVATION	261.26'	DTC:	-
SURVEY DATE:	11/5/21		
DTW:	16.42'		

Appendix C - Waste Disposal Forms

V

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	WAVSQG	1	888-785-7225	319464/D390013

5. Generator's Name and Mailing Address
Arco 980, c/o ANTEA GROUP
4006 148th Ave NE
Redmond, WA 98052
Generator's Phone: 206-854-0399

Generator's Site Address (if different than mailing address)
Arco 980
10822 Roosevelt Way NE
Seattle, WA 98125

6. Transporter 1 Company Name
Advanced Chemical Transport Inc./DBA ACTenviro
U.S. EPA ID Number
CAR000070540

7. Transporter 2 Company Name
Clean Earth Specialty Waste Solutions
U.S. EPA ID Number
~~MNS000110924~~

8. Designated Facility Name and Site Address
Burlington Environmental, LLC
1701 E Alexander Ave
Tacoma, WA 98421
Facility's Phone: 253-627-7568
U.S. EPA ID Number
WAD020257945

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Non-RCRA/Non-DOT Regulated Material Solid (SOIL CUTTINGS)	2	DM	1300	P	
2.	Non-RCRA/Non-DOT Regulated Material Liquid (GROUNDWATER)	1	DM	300	P	
3.						
4.						

13. Special Handling Instructions and Additional Information
Project Number 319464 Document #: D390013
1) 1675134-01 ARB- 2x55
2) 0675133-01 ARB- 1x55

C2001x

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.
Generator's/Offeror's Printed/Typed Name: Megan Richard As authorized agent for BP
Signature: MR
Month 10 Day 14 Year 21

INT'L
15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER
16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Max Lahman
Signature:
Month 10 Day 22 Year 21
Transporter 2 Printed/Typed Name: Chance Christenson
Signature:
Month 10 Day 29 Year 21

DESIGNATED FACILITY
17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) Month Day Year
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Lakmann Solan
Signature:
Month 11 Day 2 Year 21

Appendix D - Soil Laboratory Analytical Report and Chain-of-Custody Documentation

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-105806-1
Client Project/Site: BP -ARCO 980

For:
Antea USA Inc.
4006 148th Ave NE
Redmond, Washington 98052

Attn: Megan Richard

M. Elaine Walker

Authorized for release by:
9/29/2021 2:22:48 PM

Elaine Walker, Project Manager II
(253)248-4972
m.elaine.walker@eurofinset.com

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the BPLAMP Technical Specifications, applicable federal, state, local regulations and certification requirements as well as the methodologies as described in laboratory SOPs reviewed by the BPLAMP. This Laboratory Report is confidential and is intended for the sole use of Eurofins TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The signature on the cover page extends to the case narrative and all the data and forms in the package. The Chain of Custody is included and is an integral part of this report.

Elaine Walker
Project Manager II
9/29/2021 2:22:48 PM

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Definitions/Glossary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-105806-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past 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, high biased.

GC/MS Semi VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.

Glossary

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

Job ID: 580-105806-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative
580-105806-1

Receipt
Six samples were received on 9/13/2021 10:35 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 -0.8º C.

GC/MS VOA
Method 8260D: The following samples were received outside of the 48-hour holding time for low level volatiles: MW-21_5.2_20210909 (580-105806-1), MW-21_10_20210909 (580-105806-2), MW-21_15_20210909 (580-105806-3), MW-21_20_20210909 (580-105806-4), MW-21_25_20210909 (580-105806-5) and Trip Blank_20210909 (580-105806-6).

Method 8260D: The laboratory control sample (LCS) for preparation batch 580-368657, 580-368657 and 580-368657 and analytical batch 580-368698 recovered outside acceptance limits for Benzene, o-Xylene, Ethylbenzene, and m-Xylene & p-Xylene,. There was insufficient sample to perform a re-extraction or reanalysis; therefore, the data have been reported.

Method 8260D: Surrogate recovery for the following samples were outside the upper control limit: MW-21_5.2_20210909 (580-105806-1), MW-21_10_20210909 (580-105806-2), MW-21_15_20210909 (580-105806-3), MW-21_20_20210909 (580-105806-4) and MW-21_25_20210909 (580-105806-5). 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
Method 8270E SIM: The following sample required a dilution due to the nature of the sample matrix: MW-21_5.2_20210909 (580-105806-1). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

A laboratory control sample duplicate (LCSD) was inadvertently omitted with the 8270E SIM PAH analysis in prep batch 580-368650 and analysis batch 580-38908, per project requirements. A laboratory control sample (LCS) was performed.

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

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

GC Semi VOA
Method NWTPH-Dx: The following LCS/LCSD pair was analyzed with a CCV above %Drift control limits for Motor Oil (>C24-C36) and o-Terphenyl: (LCS 580-368793/2-A) and (LCSD 580-368793/3-A). The %Recoveries for these analytes were well within acceptance limits with or without accounting for the CCV bias. Therefore, the data is reported.

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

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

General Chemistry
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: MW-21_5.2_20210909 (580-105806-1), MW-21_10_20210909 (580-105806-2), MW-21_15_20210909 (580-105806-3), MW-21_20_20210909 (580-105806-4) and MW-21_25_20210909 (580-105806-5). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies10g. The amount provided was above this range.

Job ID: 580-105806-1 (Continued)

Laboratory: Eurofins FGS, Seattle (Continued)

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

Detection Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-105806-1

Client Sample ID: MW-21_5.2_20210909 — Lab Sample ID: 580-105806-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Methylnaphthalene	0.11		0.11		mg/Kg	20	☼	8270E SIM	Total/NA
Naphthalene	0.13		0.11		mg/Kg	20	☼	8270E SIM	Total/NA
#2 Diesel (C10-C24)	100		51		mg/Kg	1	☼	NWTPH-Dx	Total/NA
Motor Oil (>C24-C36)	790		51		mg/Kg	1	☼	NWTPH-Dx	Total/NA
Lead	66		0.30		mg/Kg	10	☼	6020B	Total/NA

Client Sample ID: MW-21_10_20210909 — Lab Sample ID: 580-105806-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	1.3		0.34		mg/Kg	10	☼	6020B	Total/NA

Client Sample ID: MW-21_15_20210909 — Lab Sample ID: 580-105806-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Gasoline	15		4.5		mg/Kg	1	☼	NWTPH-Gx	Total/NA
Lead	1.4		0.27		mg/Kg	10	☼	6020B	Total/NA

Client Sample ID: MW-21_20_20210909 — Lab Sample ID: 580-105806-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	1.1		0.31		mg/Kg	10	☼	6020B	Total/NA

Client Sample ID: MW-21_25_20210909 — Lab Sample ID: 580-105806-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	1.5		0.35		mg/Kg	10	☼	6020B	Total/NA

Client Sample ID: Trip Blank_20210909 — Lab Sample ID: 580-105806-6

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins FGS, Seattle

Client Sample ID: MW-21_5.2_20210909

Lab Sample ID: 580-105806-1
Date Collected: 09/09/21 16:50
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 91.6

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	H H3 *-	1.8		ug/Kg	☼	09/13/21 15:00	09/23/21 15:58	1
Toluene	ND	H H3	8.8		ug/Kg	☼	09/13/21 15:00	09/23/21 15:58	1
Ethylbenzene	ND	H H3 *-	1.8		ug/Kg	☼	09/13/21 15:00	09/23/21 15:58	1
m-Xylene & p-Xylene	ND	H H3 *-	8.8		ug/Kg	☼	09/13/21 15:00	09/23/21 15:58	1
o-Xylene	ND	H H3 *-	4.4		ug/Kg	☼	09/13/21 15:00	09/23/21 15:58	1
Methyl tert-butyl ether	ND	H H3	1.8		ug/Kg	☼	09/13/21 15:00	09/23/21 15:58	1
Hexane	ND	H H3	18		ug/Kg	☼	09/13/21 15:00	09/23/21 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*80 - 121*	*09/13/21 15:00*	*09/23/21 15:58*	*1*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*	*09/13/21 15:00*	*09/23/21 15:58*	*1*
Toluene-d8 (Surr)	*128*	*S1+*	*80 - 120*	*09/13/21 15:00*	*09/23/21 15:58*	*1*
Dibromofluoromethane (Surr)	*83*		*80 - 120*	*09/13/21 15:00*	*09/23/21 15:58*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.11		mg/Kg	☼	09/21/21 11:02	09/25/21 15:06	20
2-Methylnaphthalene	**0.11**		0.11		mg/Kg	☼	09/21/21 11:02	09/25/21 15:06	20
Naphthalene	**0.13**		0.11		mg/Kg	☼	09/21/21 11:02	09/25/21 15:06	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*2243*	*S1+*	*57 - 145*	*09/21/21 11:02*	*09/25/21 15:06*	*20*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.7		mg/Kg	☼	09/18/21 16:31	09/20/21 07:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*50 - 150*	*09/18/21 16:31*	*09/20/21 07:52*	*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)	**100**		51		mg/Kg	☼	09/20/21 11:30	09/23/21 03:21	1
Motor Oil (>C24-C36)	**790**		51		mg/Kg	☼	09/20/21 11:30	09/23/21 03:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*86*		*50 - 150*	*09/20/21 11:30*	*09/23/21 03:21*	*1*

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**66**		0.30		mg/Kg	☼	09/16/21 16:30	09/17/21 15:52	10

Client Sample ID: MW-21_10_20210909

Lab Sample ID: 580-105806-2
Date Collected: 09/10/21 11:18
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 89.5

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	H H3 *-	1.4		ug/Kg	☼	09/13/21 15:00	09/23/21 16:23	1
Toluene	ND	H H3	7.2		ug/Kg	☼	09/13/21 15:00	09/23/21 16:23	1
Ethylbenzene	ND	H H3 *-	1.4		ug/Kg	☼	09/13/21 15:00	09/23/21 16:23	1
m-Xylene & p-Xylene	ND	H H3 *-	7.2		ug/Kg	☼	09/13/21 15:00	09/23/21 16:23	1

Client Sample ID: MW-21_10_20210909

Lab Sample ID: 580-105806-2
Date Collected: 09/10/21 11:18
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 89.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND	H H3 *-	3.6		ug/Kg	☼	09/13/21 15:00	09/23/21 16:23	1
Methyl tert-butyl ether	ND	H H3	1.4		ug/Kg	☼	09/13/21 15:00	09/23/21 16:23	1
Hexane	ND	H H3	14		ug/Kg	☼	09/13/21 15:00	09/23/21 16:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*80 - 121*	*09/13/21 15:00*	*09/23/21 16:23*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*	*09/13/21 15:00*	*09/23/21 16:23*	*1*
Toluene-d8 (Surr)	*112*		*80 - 120*	*09/13/21 15:00*	*09/23/21 16:23*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*	*09/13/21 15:00*	*09/23/21 16:23*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.0053		mg/Kg	☼	09/23/21 11:17	09/27/21 16:08	1
2-Methylnaphthalene	ND		0.0053		mg/Kg	☼	09/23/21 11:17	09/27/21 16:08	1
Naphthalene	ND		0.0053		mg/Kg	☼	09/23/21 11:17	09/27/21 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*107*		*57 - 145*	*09/23/21 11:17*	*09/27/21 16:08*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.4		mg/Kg	☼	09/18/21 16:31	09/20/21 08:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*50 - 150*	*09/18/21 16:31*	*09/20/21 08:16*	*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		56		mg/Kg	☼	09/23/21 09:53	09/25/21 10:42	1
Motor Oil (>C24-C36)	ND		56		mg/Kg	☼	09/23/21 09:53	09/25/21 10:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*94*		*50 - 150*	*09/23/21 09:53*	*09/25/21 10:42*	*1*

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**1.3**		0.34		mg/Kg	☼	09/16/21 16:30	09/17/21 23:27	10

Client Sample ID: MW-21_15_20210909

Lab Sample ID: 580-105806-3
Date Collected: 09/10/21 11:35
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 92.2

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	H H3 *-	1.7		ug/Kg	☼	09/13/21 15:00	09/23/21 16:47	1
Toluene	ND	H H3	8.3		ug/Kg	☼	09/13/21 15:00	09/23/21 16:47	1
Ethylbenzene	ND	H H3 *-	1.7		ug/Kg	☼	09/13/21 15:00	09/23/21 16:47	1
m-Xylene & p-Xylene	ND	H H3 *-	8.3		ug/Kg	☼	09/13/21 15:00	09/23/21 16:47	1
o-Xylene	ND	H H3 *-	4.1		ug/Kg	☼	09/13/21 15:00	09/23/21 16:47	1
Methyl tert-butyl ether	ND	H H3	1.7		ug/Kg	☼	09/13/21 15:00	09/23/21 16:47	1
Hexane	ND	H H3	17		ug/Kg	☼	09/13/21 15:00	09/23/21 16:47	1

Client Sample ID: MW-21_15_20210909

Lab Sample ID: 580-105806-3
Date Collected: 09/10/21 11:35
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 92.2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		80 - 121	09/13/21 15:00	09/23/21 16:47	1
4-Bromofluorobenzene (Surr)	104		80 - 120	09/13/21 15:00	09/23/21 16:47	1
Toluene-d8 (Surr)	124	S1+	80 - 120	09/13/21 15:00	09/23/21 16:47	1
Dibromofluoromethane (Surr)	85		80 - 120	09/13/21 15:00	09/23/21 16:47	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.0052		mg/Kg	☼	09/23/21 11:17	09/27/21 16:30	1
2-Methylnaphthalene	ND		0.0052		mg/Kg	☼	09/23/21 11:17	09/27/21 16:30	1
Naphthalene	ND		0.0052		mg/Kg	☼	09/23/21 11:17	09/27/21 16:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	107		57 - 145	09/23/21 11:17	09/27/21 16:30	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	15		4.5		mg/Kg	☼	09/18/21 16:31	09/20/21 08:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		50 - 150	09/18/21 16:31	09/20/21 08:41	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	☼	09/23/21 09:53	09/25/21 11:02	1
Motor Oil (>C24-C36)	ND		53		mg/Kg	☼	09/23/21 09:53	09/25/21 11:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	97		50 - 150	09/23/21 09:53	09/25/21 11:02	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.4		0.27		mg/Kg	☼	09/16/21 16:30	09/17/21 23:31	10

Client Sample ID: MW-21_20_20210909

Lab Sample ID: 580-105806-4
Date Collected: 09/10/21 11:52
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 92.3

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	H H3 *-	1.6		ug/Kg	☼	09/13/21 15:00	09/23/21 17:12	1
Toluene	ND	H H3	7.8		ug/Kg	☼	09/13/21 15:00	09/23/21 17:12	1
Ethylbenzene	ND	H H3 *-	1.6		ug/Kg	☼	09/13/21 15:00	09/23/21 17:12	1
m-Xylene & p-Xylene	ND	H H3 *-	7.8		ug/Kg	☼	09/13/21 15:00	09/23/21 17:12	1
o-Xylene	ND	H H3 *-	3.9		ug/Kg	☼	09/13/21 15:00	09/23/21 17:12	1
Methyl tert-butyl ether	ND	H H3	1.6		ug/Kg	☼	09/13/21 15:00	09/23/21 17:12	1
Hexane	ND	H H3	16		ug/Kg	☼	09/13/21 15:00	09/23/21 17:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		80 - 121	09/13/21 15:00	09/23/21 17:12	1
4-Bromofluorobenzene (Surr)	97		80 - 120	09/13/21 15:00	09/23/21 17:12	1
Toluene-d8 (Surr)	128	S1+	80 - 120	09/13/21 15:00	09/23/21 17:12	1
Dibromofluoromethane (Surr)	85		80 - 120	09/13/21 15:00	09/23/21 17:12	1

Client Sample ID: MW-21_20_20210909

Lab Sample ID: 580-105806-4
Date Collected: 09/10/21 11:52
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 92.3

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.0051		mg/Kg	☼	09/23/21 11:17	09/27/21 16:53	1
2-Methylnaphthalene	ND		0.0051		mg/Kg	☼	09/23/21 11:17	09/27/21 16:53	1
Naphthalene	ND		0.0051		mg/Kg	☼	09/23/21 11:17	09/27/21 16:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*108*		*57 - 145*	*09/23/21 11:17*	*09/27/21 16:53*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.4		mg/Kg	☼	09/18/21 16:31	09/20/21 09:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*50 - 150*	*09/18/21 16:31*	*09/20/21 09:30*	*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	☼	09/23/21 09:53	09/25/21 11:22	1
Motor Oil (>C24-C36)	ND		53		mg/Kg	☼	09/23/21 09:53	09/25/21 11:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*94*		*50 - 150*	*09/23/21 09:53*	*09/25/21 11:22*	*1*

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**1.1**		0.31		mg/Kg	☼	09/16/21 16:30	09/17/21 23:35	10

Client Sample ID: MW-21_25_20210909

Lab Sample ID: 580-105806-5
Date Collected: 09/10/21 11:55
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 89.9

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	H H3 *-	1.6		ug/Kg	☼	09/13/21 15:00	09/23/21 17:37	1
Toluene	ND	H H3	8.2		ug/Kg	☼	09/13/21 15:00	09/23/21 17:37	1
Ethylbenzene	ND	H H3 *-	1.6		ug/Kg	☼	09/13/21 15:00	09/23/21 17:37	1
m-Xylene & p-Xylene	ND	H H3 *-	8.2		ug/Kg	☼	09/13/21 15:00	09/23/21 17:37	1
o-Xylene	ND	H H3 *-	4.1		ug/Kg	☼	09/13/21 15:00	09/23/21 17:37	1
Methyl tert-butyl ether	ND	H H3	1.6		ug/Kg	☼	09/13/21 15:00	09/23/21 17:37	1
Hexane	ND	H H3	16		ug/Kg	☼	09/13/21 15:00	09/23/21 17:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 121*	*09/13/21 15:00*	*09/23/21 17:37*	*1*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*	*09/13/21 15:00*	*09/23/21 17:37*	*1*
Toluene-d8 (Surr)	*121*	*S1+*	*80 - 120*	*09/13/21 15:00*	*09/23/21 17:37*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*	*09/13/21 15:00*	*09/23/21 17:37*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.0052		mg/Kg	☼	09/23/21 11:17	09/27/21 17:15	1
2-Methylnaphthalene	ND		0.0052		mg/Kg	☼	09/23/21 11:17	09/27/21 17:15	1
Naphthalene	ND		0.0052		mg/Kg	☼	09/23/21 11:17	09/27/21 17:15	1

Client Sample ID: MW-21_25_20210909

Lab Sample ID: 580-105806-5
Date Collected: 09/10/21 11:55
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 89.9

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*106*		*57 - 145*	*09/23/21 11:17*	*09/27/21 17:15*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg	☼	09/18/21 16:31	09/20/21 09:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*50 - 150*	*09/18/21 16:31*	*09/20/21 09:54*	*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		54		mg/Kg	☼	09/24/21 14:32	09/28/21 13:24	1
Motor Oil (>C24-C36)	ND		54		mg/Kg	☼	09/24/21 14:32	09/28/21 13:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*95*		*50 - 150*	*09/24/21 14:32*	*09/28/21 13:24*	*1*

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**1.5**		0.35		mg/Kg	☼	09/16/21 16:30	09/17/21 23:38	10

Client Sample ID: Trip Blank_20210909

Lab Sample ID: 580-105806-6
Date Collected: 09/09/21 00:01
Matrix: Solid
Date Received: 09/13/21 10:35

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	H H3 *-	2.0		ug/Kg		09/23/21 17:27	09/23/21 20:29	1
Toluene	ND	H H3	10		ug/Kg		09/23/21 17:27	09/23/21 20:29	1
Ethylbenzene	ND	H H3 *-	2.0		ug/Kg		09/23/21 17:27	09/23/21 20:29	1
m-Xylene & p-Xylene	ND	H H3 *-	10		ug/Kg		09/23/21 17:27	09/23/21 20:29	1
o-Xylene	ND	H H3 *-	5.0		ug/Kg		09/23/21 17:27	09/23/21 20:29	1
Methyl tert-butyl ether	ND	H H3	2.0		ug/Kg		09/23/21 17:27	09/23/21 20:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*80 - 121*	*09/23/21 17:27*	*09/23/21 20:29*	*1*
4-Bromofluorobenzene (Surr)	*88*		*80 - 120*	*09/23/21 17:27*	*09/23/21 20:29*	*1*
Toluene-d8 (Surr)	*121*	*S1+*	*80 - 120*	*09/23/21 17:27*	*09/23/21 20:29*	*1*
Dibromofluoromethane (Surr)	*90*		*80 - 120*	*09/23/21 17:27*	*09/23/21 20:29*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg		09/18/21 16:31	09/20/21 10:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*50 - 150*	*09/18/21 16:31*	*09/20/21 10:19*	*1*

Surrogate Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-105806-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(80-121)	(80-120)	(80-120)	(80-120)
580-105806-1	MW-21_5.2_20210909	90	97	128 S1+	83
580-105806-2	MW-21_10_20210909	108	101	112	96
580-105806-3	MW-21_15_20210909	84	104	124 S1+	85
580-105806-4	MW-21_20_20210909	85	97	128 S1+	85
580-105806-5	MW-21_25_20210909	106	98	121 S1+	96
580-105806-6	Trip Blank_20210909	80	88	121 S1+	90
LCS 580-368657/2-A	Lab Control Sample	102	105	116	93
LCSD 580-368657/3-A	Lab Control Sample Dup	110	107	109	94
MB 580-368657/1-A	Method Blank	100	99	121 S1+	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		TPHL
Lab Sample ID	Client Sample ID	(57-145)
580-105806-1	MW-21_5.2_20210909	2243 S1+
580-105806-2	MW-21_10_20210909	107
580-105806-3	MW-21_15_20210909	107
580-105806-4	MW-21_20_20210909	108
580-105806-5	MW-21_25_20210909	106
LCS 580-368416/2-A	Lab Control Sample	88
LCS 580-368650/2-A	Lab Control Sample	101
MB 580-368416/1-A	Method Blank	96
MB 580-368650/1-A	Method Blank	113

Surrogate Legend

TPHL = Terphenyl-d14

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		BFB2
Lab Sample ID	Client Sample ID	(50-150)
580-105806-1	MW-21_5.2_20210909	86
580-105806-2	MW-21_10_20210909	87
580-105806-3	MW-21_15_20210909	89
580-105806-4	MW-21_20_20210909	84
580-105806-5	MW-21_25_20210909	85
580-105806-6	Trip Blank_20210909	88
LCS 580-368205/2-A	Lab Control Sample	103
LCSD 580-368205/3-A	Lab Control Sample Dup	108
MB 580-368205/1-A	Method Blank	89

Surrogate Legend

Surrogate Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-105806-1

BFB = 4-Bromofluorobenzene (Surr)

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	OTPH (50-150)									
580-105806-1	MW-21_5.2_20210909	86									
580-105806-2	MW-21_10_20210909	94									
580-105806-3	MW-21_15_20210909	97									
580-105806-4	MW-21_20_20210909	94									
580-105806-5	MW-21_25_20210909	95									
LCS 580-368282/2-A	Lab Control Sample	95									
LCS 580-368627/2-A	Lab Control Sample	106									
LCS 580-368793/2-A	Lab Control Sample	106									
LCSD 580-368282/3-A	Lab Control Sample Dup	97									
LCSD 580-368793/3-A	Lab Control Sample Dup	104									
MB 580-368282/1-A	Method Blank	89									
MB 580-368627/1-A	Method Blank	95									
MB 580-368793/1-A	Method Blank	91									

Surrogate Legend

OTPH = o-Terphenyl

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-368657/1-A
Matrix: Solid
Analysis Batch: 368698

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 368657

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/Kg		09/23/21 10:00	09/23/21 15:08	1
Toluene	ND		10		ug/Kg		09/23/21 10:00	09/23/21 15:08	1
Ethylbenzene	ND		2.0		ug/Kg		09/23/21 10:00	09/23/21 15:08	1
m-Xylene & p-Xylene	ND		10		ug/Kg		09/23/21 10:00	09/23/21 15:08	1
o-Xylene	ND		5.0		ug/Kg		09/23/21 10:00	09/23/21 15:08	1
Methyl tert-butyl ether	ND		2.0		ug/Kg		09/23/21 10:00	09/23/21 15:08	1
Hexane	ND		20		ug/Kg		09/23/21 10:00	09/23/21 15:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 121*	*09/23/21 10:00*	*09/23/21 15:08*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*	*09/23/21 10:00*	*09/23/21 15:08*	*1*
Toluene-d8 (Surr)	*121*	*S1+*	*80 - 120*	*09/23/21 10:00*	*09/23/21 15:08*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 120*	*09/23/21 10:00*	*09/23/21 15:08*	*1*

Lab Sample ID: LCS 580-368657/2-A
Matrix: Solid
Analysis Batch: 368698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 368657

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			20.0	14.9	*-	ug/Kg		74	79 - 135		
Toluene			20.0	18.7		ug/Kg		93	75 - 125		
Ethylbenzene			20.0	16.0		ug/Kg		80	80 - 135		
m-Xylene & p-Xylene			20.0	16.2		ug/Kg		81	80 - 132		
o-Xylene			20.0	17.6		ug/Kg		88	80 - 132		
Methyl tert-butyl ether			20.0	17.0		ug/Kg		85	71 - 126		
Hexane			20.0	13.3	J	ug/Kg		66	59 - 145		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 121*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*
Toluene-d8 (Surr)	*116*		*80 - 120*
Dibromofluoromethane (Surr)	*93*		*80 - 120*

Lab Sample ID: LCSD 580-368657/3-A
Matrix: Solid
Analysis Batch: 368698

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 368657

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			20.0	14.2	*-	ug/Kg		71	79 - 135	5	20
Toluene			20.0	15.6		ug/Kg		78	75 - 125	18	20
Ethylbenzene			20.0	13.9	*-	ug/Kg		70	80 - 135	14	20
m-Xylene & p-Xylene			20.0	13.3	*-	ug/Kg		67	80 - 132	20	20
o-Xylene			20.0	15.1	*-	ug/Kg		76	80 - 132	15	20
Methyl tert-butyl ether			20.0	18.1		ug/Kg		91	71 - 126	7	20
Hexane			20.0	12.3	J	ug/Kg		61	59 - 145	8	27

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

Lab Sample ID: LCSD 580-368657/3-A
Matrix: Solid
Analysis Batch: 368698

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 368657

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	110		80 - 121
4-Bromofluorobenzene (Surr)	107		80 - 120
Toluene-d8 (Surr)	109		80 - 120
Dibromofluoromethane (Surr)	94		80 - 120

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-368416/1-A
Matrix: Solid
Analysis Batch: 368807

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 368416

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.0050		mg/Kg		09/21/21 11:02	09/25/21 12:48	1
2-Methylnaphthalene	ND		0.0050		mg/Kg		09/21/21 11:02	09/25/21 12:48	1
Naphthalene	ND		0.0050		mg/Kg		09/21/21 11:02	09/25/21 12:48	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	96		57 - 145	09/21/21 11:02	09/25/21 12:48	1

Lab Sample ID: LCS 580-368416/2-A
Matrix: Solid
Analysis Batch: 368807

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 368416

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	1.00	0.687		mg/Kg		69	64 - 120
2-Methylnaphthalene	1.00	0.707		mg/Kg		71	64 - 120
Naphthalene	1.00	0.707		mg/Kg		71	65 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Terphenyl-d14	88		57 - 145

Lab Sample ID: MB 580-368650/1-A
Matrix: Solid
Analysis Batch: 368908

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 368650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.0050		mg/Kg		09/23/21 11:17	09/27/21 15:23	1
2-Methylnaphthalene	ND		0.0050		mg/Kg		09/23/21 11:17	09/27/21 15:23	1
Naphthalene	ND		0.0050		mg/Kg		09/23/21 11:17	09/27/21 15:23	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	113		57 - 145	09/23/21 11:17	09/27/21 15:23	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-368650/2-A
Matrix: Solid
Analysis Batch: 368908

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 368650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	1.00	0.752		mg/Kg		75	64 - 120
2-Methylnaphthalene	1.00	0.777		mg/Kg		78	64 - 120
Naphthalene	1.00	0.771		mg/Kg		77	65 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Terphenyl-d14	*101*		*57 - 145*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-368205/1-A
Matrix: Solid
Analysis Batch: 368232

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 368205

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0		mg/Kg		09/18/21 16:25	09/20/21 05:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*50 - 150*	*09/18/21 16:25*	*09/20/21 05:01*	*1*

Lab Sample ID: LCS 580-368205/2-A
Matrix: Solid
Analysis Batch: 368232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 368205

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	40.0	34.1		mg/Kg		85	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*50 - 150*

Lab Sample ID: LCSD 580-368205/3-A
Matrix: Solid
Analysis Batch: 368232

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 368205

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline	40.0	36.3		mg/Kg		91	80 - 120	6	10

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*50 - 150*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-368282/1-A
Matrix: Solid
Analysis Batch: 368579

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 368282

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50		mg/Kg		09/20/21 11:30	09/23/21 01:41	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		09/20/21 11:30	09/23/21 01:41	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	89		50 - 150	09/20/21 11:30	09/23/21 01:41	1

Lab Sample ID: LCS 580-368282/2-A
Matrix: Solid
Analysis Batch: 368579

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 368282

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
#2 Diesel (C10-C24)			500	450		mg/Kg		90	70 - 125		
Motor Oil (>C24-C36)			500	447		mg/Kg		89	70 - 129		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	95		50 - 150

Lab Sample ID: LCSD 580-368282/3-A
Matrix: Solid
Analysis Batch: 368579

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 368282

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			500	450		mg/Kg		90	70 - 125	0	16
Motor Oil (>C24-C36)			500	448		mg/Kg		90	70 - 129	0	16

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	97		50 - 150

Lab Sample ID: MB 580-368627/1-A
Matrix: Solid
Analysis Batch: 368789

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 368627

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50		mg/Kg		09/23/21 09:53	09/25/21 01:59	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		09/23/21 09:53	09/25/21 01:59	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	95		50 - 150	09/23/21 09:53	09/25/21 01:59	1

Lab Sample ID: LCS 580-368627/2-A
Matrix: Solid
Analysis Batch: 368789

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 368627

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
#2 Diesel (C10-C24)			500	480		mg/Kg		96	70 - 125		
Motor Oil (>C24-C36)			500	491		mg/Kg		98	70 - 129		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	106		50 - 150

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: MB 580-368793/1-A
Matrix: Solid
Analysis Batch: 369048

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 368793

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50		mg/Kg		09/24/21 14:32	09/28/21 13:04	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		09/24/21 14:32	09/28/21 13:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*91*		*50 - 150*	*09/24/21 14:32*	*09/28/21 13:04*	*1*

Lab Sample ID: LCS 580-368793/2-A
Matrix: Solid
Analysis Batch: 368963

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 368793

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
#2 Diesel (C10-C24)			500	468		mg/Kg		94	70 - 125		
Motor Oil (>C24-C36)			500	508		mg/Kg		102	70 - 129		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*106*		*50 - 150*

Lab Sample ID: LCSD 580-368793/3-A
Matrix: Solid
Analysis Batch: 368963

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 368793

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			500	456		mg/Kg		91	70 - 125	3	16
Motor Oil (>C24-C36)			500	480		mg/Kg		96	70 - 129	6	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*104*		*50 - 150*

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-368057/22-A
Matrix: Solid
Analysis Batch: 368243

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 368057

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.25		mg/Kg		09/16/21 16:30	09/17/21 15:44	5

Lab Sample ID: LCS 580-368057/23-A
Matrix: Solid
Analysis Batch: 368243

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 368057

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead			50.0	49.5		mg/Kg		99	80 - 120		

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 580-368057/24-A
Matrix: Solid
Analysis Batch: 368243

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 368057

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead			50.0	49.2		mg/Kg		98	80 - 120	1	20

Lab Sample ID: 580-105806-1 MS
Matrix: Solid
Analysis Batch: 368243

Client Sample ID: MW-21_5.2_20210909
Prep Type: Total/NA
Prep Batch: 368057

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead	66		30.3	97.8		mg/Kg	☼	104	80 - 120		

Lab Sample ID: 580-105806-1 MSD
Matrix: Solid
Analysis Batch: 368243

Client Sample ID: MW-21_5.2_20210909
Prep Type: Total/NA
Prep Batch: 368057

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	66		30.0	97.0		mg/Kg	☼	103	80 - 120	1	20

Lab Sample ID: 580-105806-1 DU
Matrix: Solid
Analysis Batch: 368243

Client Sample ID: MW-21_5.2_20210909
Prep Type: Total/NA
Prep Batch: 368057

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Lead	66		56.5		mg/Kg	☼	16	20

GC/MS VOA

Prep Batch: 368657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	5035	
580-105806-1 - RA	MW-21_5.2_20210909	Total/NA	Solid	5035	
580-105806-2	MW-21_10_20210909	Total/NA	Solid	5035	
580-105806-2 - RA	MW-21_10_20210909	Total/NA	Solid	5035	
580-105806-3	MW-21_15_20210909	Total/NA	Solid	5035	
580-105806-3 - RA	MW-21_15_20210909	Total/NA	Solid	5035	
580-105806-4	MW-21_20_20210909	Total/NA	Solid	5035	
580-105806-4 - RA	MW-21_20_20210909	Total/NA	Solid	5035	
580-105806-5	MW-21_25_20210909	Total/NA	Solid	5035	
580-105806-5 - RA	MW-21_25_20210909	Total/NA	Solid	5035	
580-105806-6	Trip Blank_20210909	Total/NA	Solid	5035	
MB 580-368657/1-A	Method Blank	Total/NA	Solid	5035	
LCS 580-368657/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 580-368657/3-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Analysis Batch: 368698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	8260D	368657
580-105806-1 - RA	MW-21_5.2_20210909	Total/NA	Solid	8260D	368657
580-105806-2	MW-21_10_20210909	Total/NA	Solid	8260D	368657
580-105806-2 - RA	MW-21_10_20210909	Total/NA	Solid	8260D	368657
580-105806-3	MW-21_15_20210909	Total/NA	Solid	8260D	368657
580-105806-3 - RA	MW-21_15_20210909	Total/NA	Solid	8260D	368657
580-105806-4	MW-21_20_20210909	Total/NA	Solid	8260D	368657
580-105806-4 - RA	MW-21_20_20210909	Total/NA	Solid	8260D	368657
580-105806-5	MW-21_25_20210909	Total/NA	Solid	8260D	368657
580-105806-5 - RA	MW-21_25_20210909	Total/NA	Solid	8260D	368657
580-105806-6	Trip Blank_20210909	Total/NA	Solid	8260D	368657
MB 580-368657/1-A	Method Blank	Total/NA	Solid	8260D	368657
LCS 580-368657/2-A	Lab Control Sample	Total/NA	Solid	8260D	368657
LCSD 580-368657/3-A	Lab Control Sample Dup	Total/NA	Solid	8260D	368657

GC/MS Semi VOA

Prep Batch: 368416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	3546	
MB 580-368416/1-A	Method Blank	Total/NA	Solid	3546	
LCS 580-368416/2-A	Lab Control Sample	Total/NA	Solid	3546	

Prep Batch: 368650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-2	MW-21_10_20210909	Total/NA	Solid	3546	
580-105806-3	MW-21_15_20210909	Total/NA	Solid	3546	
580-105806-4	MW-21_20_20210909	Total/NA	Solid	3546	
580-105806-5	MW-21_25_20210909	Total/NA	Solid	3546	
MB 580-368650/1-A	Method Blank	Total/NA	Solid	3546	
LCS 580-368650/2-A	Lab Control Sample	Total/NA	Solid	3546	

GC/MS Semi VOA

Analysis Batch: 368807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	8270E SIM	368416
MB 580-368416/1-A	Method Blank	Total/NA	Solid	8270E SIM	368416
LCS 580-368416/2-A	Lab Control Sample	Total/NA	Solid	8270E SIM	368416

Analysis Batch: 368908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-2	MW-21_10_20210909	Total/NA	Solid	8270E SIM	368650
580-105806-3	MW-21_15_20210909	Total/NA	Solid	8270E SIM	368650
580-105806-4	MW-21_20_20210909	Total/NA	Solid	8270E SIM	368650
580-105806-5	MW-21_25_20210909	Total/NA	Solid	8270E SIM	368650
MB 580-368650/1-A	Method Blank	Total/NA	Solid	8270E SIM	368650
LCS 580-368650/2-A	Lab Control Sample	Total/NA	Solid	8270E SIM	368650

GC VOA

Prep Batch: 368205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	5035	
580-105806-2	MW-21_10_20210909	Total/NA	Solid	5035	
580-105806-3	MW-21_15_20210909	Total/NA	Solid	5035	
580-105806-4	MW-21_20_20210909	Total/NA	Solid	5035	
580-105806-5	MW-21_25_20210909	Total/NA	Solid	5035	
580-105806-6	Trip Blank_20210909	Total/NA	Solid	5035	
MB 580-368205/1-A	Method Blank	Total/NA	Solid	5035	
LCS 580-368205/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 580-368205/3-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Analysis Batch: 368232

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	NWTPH-Gx	368205
580-105806-2	MW-21_10_20210909	Total/NA	Solid	NWTPH-Gx	368205
580-105806-3	MW-21_15_20210909	Total/NA	Solid	NWTPH-Gx	368205
580-105806-4	MW-21_20_20210909	Total/NA	Solid	NWTPH-Gx	368205
580-105806-5	MW-21_25_20210909	Total/NA	Solid	NWTPH-Gx	368205
580-105806-6	Trip Blank_20210909	Total/NA	Solid	NWTPH-Gx	368205
MB 580-368205/1-A	Method Blank	Total/NA	Solid	NWTPH-Gx	368205
LCS 580-368205/2-A	Lab Control Sample	Total/NA	Solid	NWTPH-Gx	368205
LCSD 580-368205/3-A	Lab Control Sample Dup	Total/NA	Solid	NWTPH-Gx	368205

GC Semi VOA

Prep Batch: 368282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	3546	
MB 580-368282/1-A	Method Blank	Total/NA	Solid	3546	
LCS 580-368282/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCSD 580-368282/3-A	Lab Control Sample Dup	Total/NA	Solid	3546	

Analysis Batch: 368579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	NWTPH-Dx	368282
MB 580-368282/1-A	Method Blank	Total/NA	Solid	NWTPH-Dx	368282

GC Semi VOA (Continued)

Analysis Batch: 368579 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 580-368282/2-A	Lab Control Sample	Total/NA	Solid	NWTPH-Dx	368282
LCSD 580-368282/3-A	Lab Control Sample Dup	Total/NA	Solid	NWTPH-Dx	368282

Prep Batch: 368627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-2	MW-21_10_20210909	Total/NA	Solid	3546	
580-105806-3	MW-21_15_20210909	Total/NA	Solid	3546	
580-105806-4	MW-21_20_20210909	Total/NA	Solid	3546	
MB 580-368627/1-A	Method Blank	Total/NA	Solid	3546	
LCS 580-368627/2-A	Lab Control Sample	Total/NA	Solid	3546	

Analysis Batch: 368789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-2	MW-21_10_20210909	Total/NA	Solid	NWTPH-Dx	368627
580-105806-3	MW-21_15_20210909	Total/NA	Solid	NWTPH-Dx	368627
580-105806-4	MW-21_20_20210909	Total/NA	Solid	NWTPH-Dx	368627
MB 580-368627/1-A	Method Blank	Total/NA	Solid	NWTPH-Dx	368627
LCS 580-368627/2-A	Lab Control Sample	Total/NA	Solid	NWTPH-Dx	368627

Prep Batch: 368793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-5	MW-21_25_20210909	Total/NA	Solid	3546	
MB 580-368793/1-A	Method Blank	Total/NA	Solid	3546	
LCS 580-368793/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCSD 580-368793/3-A	Lab Control Sample Dup	Total/NA	Solid	3546	

Analysis Batch: 368963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 580-368793/2-A	Lab Control Sample	Total/NA	Solid	NWTPH-Dx	368793
LCSD 580-368793/3-A	Lab Control Sample Dup	Total/NA	Solid	NWTPH-Dx	368793

Analysis Batch: 369048

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-5	MW-21_25_20210909	Total/NA	Solid	NWTPH-Dx	368793
MB 580-368793/1-A	Method Blank	Total/NA	Solid	NWTPH-Dx	368793

Metals

Prep Batch: 368057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	3050B	
580-105806-2	MW-21_10_20210909	Total/NA	Solid	3050B	
580-105806-3	MW-21_15_20210909	Total/NA	Solid	3050B	
580-105806-4	MW-21_20_20210909	Total/NA	Solid	3050B	
580-105806-5	MW-21_25_20210909	Total/NA	Solid	3050B	
MB 580-368057/22-A	Method Blank	Total/NA	Solid	3050B	
LCS 580-368057/23-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 580-368057/24-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
580-105806-1 MS	MW-21_5.2_20210909	Total/NA	Solid	3050B	
580-105806-1 MSD	MW-21_5.2_20210909	Total/NA	Solid	3050B	
580-105806-1 DU	MW-21_5.2_20210909	Total/NA	Solid	3050B	

QC Association Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-105806-1

Metals

Analysis Batch: 368243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	6020B	368057
MB 580-368057/22-A	Method Blank	Total/NA	Solid	6020B	368057
LCS 580-368057/23-A	Lab Control Sample	Total/NA	Solid	6020B	368057
LCSD 580-368057/24-A	Lab Control Sample Dup	Total/NA	Solid	6020B	368057
580-105806-1 MS	MW-21_5.2_20210909	Total/NA	Solid	6020B	368057
580-105806-1 MSD	MW-21_5.2_20210909	Total/NA	Solid	6020B	368057
580-105806-1 DU	MW-21_5.2_20210909	Total/NA	Solid	6020B	368057

Analysis Batch: 368248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-2	MW-21_10_20210909	Total/NA	Solid	6020B	368057
580-105806-3	MW-21_15_20210909	Total/NA	Solid	6020B	368057
580-105806-4	MW-21_20_20210909	Total/NA	Solid	6020B	368057
580-105806-5	MW-21_25_20210909	Total/NA	Solid	6020B	368057

General Chemistry

Analysis Batch: 368371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-105806-1	MW-21_5.2_20210909	Total/NA	Solid	D 2216	
580-105806-2	MW-21_10_20210909	Total/NA	Solid	D 2216	
580-105806-3	MW-21_15_20210909	Total/NA	Solid	D 2216	
580-105806-4	MW-21_20_20210909	Total/NA	Solid	D 2216	
580-105806-5	MW-21_25_20210909	Total/NA	Solid	D 2216	
580-105806-4 DU	MW-21_20_20210909	Total/NA	Solid	D 2216	

Client Sample ID: MW-21_5.2_20210909

Lab Sample ID: 580-105806-1

Date Collected: 09/09/21 16:50

Matrix: Solid

Date Received: 09/13/21 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	368371	09/20/21 21:05	JHR	FGS SEA

Client Sample ID: MW-21_5.2_20210909

Lab Sample ID: 580-105806-1

Date Collected: 09/09/21 16:50

Matrix: Solid

Date Received: 09/13/21 10:35

Percent Solids: 91.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			368657	09/13/21 15:00	ASJ	FGS SEA
Total/NA	Analysis	8260D		1	368698	09/23/21 15:58	ASJ	FGS SEA
Total/NA	Prep	5035	RA		368657	09/23/21 17:27	ASJ	FGS SEA
Total/NA	Analysis	8260D	RA	1	368698	09/23/21 18:26	ASJ	FGS SEA
Total/NA	Prep	3546			368416	09/21/21 11:02	CRC	FGS SEA
Total/NA	Analysis	8270E SIM		20	368807	09/25/21 15:06	W1T	FGS SEA
Total/NA	Prep	5035			368205	09/18/21 16:31	JBT	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	368232	09/20/21 07:52	JBT	FGS SEA
Total/NA	Prep	3546			368282	09/20/21 11:30	CRC	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	368579	09/23/21 03:21	JAE	FGS SEA
Total/NA	Prep	3050B			368057	09/16/21 16:30	TMH	FGS SEA
Total/NA	Analysis	6020B		10	368243	09/17/21 15:52	FCW	FGS SEA

Client Sample ID: MW-21_10_20210909

Lab Sample ID: 580-105806-2

Date Collected: 09/10/21 11:18

Matrix: Solid

Date Received: 09/13/21 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	368371	09/20/21 21:05	JHR	FGS SEA

Client Sample ID: MW-21_10_20210909

Lab Sample ID: 580-105806-2

Date Collected: 09/10/21 11:18

Matrix: Solid

Date Received: 09/13/21 10:35

Percent Solids: 89.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			368657	09/13/21 15:00	ASJ	FGS SEA
Total/NA	Analysis	8260D		1	368698	09/23/21 16:23	ASJ	FGS SEA
Total/NA	Prep	5035	RA		368657	09/23/21 17:27	ASJ	FGS SEA
Total/NA	Analysis	8260D	RA	1	368698	09/23/21 18:50	ASJ	FGS SEA
Total/NA	Prep	3546			368650	09/23/21 11:17	CRC	FGS SEA
Total/NA	Analysis	8270E SIM		1	368908	09/27/21 16:08	W1T	FGS SEA
Total/NA	Prep	5035			368205	09/18/21 16:31	JBT	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	368232	09/20/21 08:16	JBT	FGS SEA
Total/NA	Prep	3546			368627	09/23/21 09:53	CRC	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	368789	09/25/21 10:42	JAE	FGS SEA
Total/NA	Prep	3050B			368057	09/16/21 16:30	TMH	FGS SEA
Total/NA	Analysis	6020B		10	368248	09/17/21 23:27	FCW	FGS SEA

Client Sample ID: MW-21_15_20210909

Lab Sample ID: 580-105806-3
Date Collected: 09/10/21 11:35
Matrix: Solid
Date Received: 09/13/21 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	368371	09/20/21 21:05	JHR	FGS SEA

Client Sample ID: MW-21_15_20210909

Lab Sample ID: 580-105806-3
Date Collected: 09/10/21 11:35
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 92.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			368657	09/13/21 15:00	ASJ	FGS SEA
Total/NA	Analysis	8260D		1	368698	09/23/21 16:47	ASJ	FGS SEA
Total/NA	Prep	5035	RA		368657	09/23/21 17:27	ASJ	FGS SEA
Total/NA	Analysis	8260D	RA	1	368698	09/23/21 19:15	ASJ	FGS SEA
Total/NA	Prep	3546			368650	09/23/21 11:17	CRC	FGS SEA
Total/NA	Analysis	8270E SIM		1	368908	09/27/21 16:30	W1T	FGS SEA
Total/NA	Prep	5035			368205	09/18/21 16:31	JBT	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	368232	09/20/21 08:41	JBT	FGS SEA
Total/NA	Prep	3546			368627	09/23/21 09:53	CRC	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	368789	09/25/21 11:02	JAE	FGS SEA
Total/NA	Prep	3050B			368057	09/16/21 16:30	TMH	FGS SEA
Total/NA	Analysis	6020B		10	368248	09/17/21 23:31	FCW	FGS SEA

Client Sample ID: MW-21_20_20210909

Lab Sample ID: 580-105806-4
Date Collected: 09/10/21 11:52
Matrix: Solid
Date Received: 09/13/21 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	368371	09/20/21 21:05	JHR	FGS SEA

Client Sample ID: MW-21_20_20210909

Lab Sample ID: 580-105806-4
Date Collected: 09/10/21 11:52
Matrix: Solid
Date Received: 09/13/21 10:35
Percent Solids: 92.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			368657	09/13/21 15:00	ASJ	FGS SEA
Total/NA	Analysis	8260D		1	368698	09/23/21 17:12	ASJ	FGS SEA
Total/NA	Prep	5035	RA		368657	09/23/21 17:27	ASJ	FGS SEA
Total/NA	Analysis	8260D	RA	1	368698	09/23/21 19:40	ASJ	FGS SEA
Total/NA	Prep	3546			368650	09/23/21 11:17	CRC	FGS SEA
Total/NA	Analysis	8270E SIM		1	368908	09/27/21 16:53	W1T	FGS SEA
Total/NA	Prep	5035			368205	09/18/21 16:31	JBT	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	368232	09/20/21 09:30	JBT	FGS SEA
Total/NA	Prep	3546			368627	09/23/21 09:53	CRC	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	368789	09/25/21 11:22	JAE	FGS SEA
Total/NA	Prep	3050B			368057	09/16/21 16:30	TMH	FGS SEA
Total/NA	Analysis	6020B		10	368248	09/17/21 23:35	FCW	FGS SEA

Lab Chronicle

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-105806-1

Client Sample ID: MW-21_25_20210909
Date Collected: 09/10/21 11:55
Date Received: 09/13/21 10:35

Lab Sample ID: 580-105806-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	368371	09/20/21 21:05	JHR	FGS SEA

Client Sample ID: MW-21_25_20210909
Date Collected: 09/10/21 11:55
Date Received: 09/13/21 10:35

Lab Sample ID: 580-105806-5
Matrix: Solid
Percent Solids: 89.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			368657	09/13/21 15:00	ASJ	FGS SEA
Total/NA	Analysis	8260D		1	368698	09/23/21 17:37	ASJ	FGS SEA
Total/NA	Prep	5035	RA		368657	09/23/21 17:27	ASJ	FGS SEA
Total/NA	Analysis	8260D	RA	1	368698	09/23/21 20:04	ASJ	FGS SEA
Total/NA	Prep	3546			368650	09/23/21 11:17	CRC	FGS SEA
Total/NA	Analysis	8270E SIM		1	368908	09/27/21 17:15	W1T	FGS SEA
Total/NA	Prep	5035			368205	09/18/21 16:31	JBT	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	368232	09/20/21 09:54	JBT	FGS SEA
Total/NA	Prep	3546			368793	09/24/21 14:32	CRC	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	369048	09/28/21 13:24	JAE	FGS SEA
Total/NA	Prep	3050B			368057	09/16/21 16:30	TMH	FGS SEA
Total/NA	Analysis	6020B		10	368248	09/17/21 23:38	FCW	FGS SEA

Client Sample ID: Trip Blank_20210909
Date Collected: 09/09/21 00:01
Date Received: 09/13/21 10:35

Lab Sample ID: 580-105806-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			368657	09/23/21 17:27	ASJ	FGS SEA
Total/NA	Analysis	8260D		1	368698	09/23/21 20:29	ASJ	FGS SEA
Total/NA	Prep	5035			368205	09/18/21 16:31	JBT	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	368232	09/20/21 10:19	JBT	FGS SEA

Laboratory References:
FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-105806-1

Laboratory: Eurofins FGS, 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
8260D	5035	Solid	Hexane
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids

Method Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-105806-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	FGS SEA
8270E SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	FGS SEA
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC)	NWTPH	FGS SEA
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	FGS SEA
6020B	Metals (ICP/MS)	SW846	FGS SEA
D 2216	Percent Moisture	ASTM	FGS SEA
3050B	Preparation, Metals	SW846	FGS SEA
3546	Microwave Extraction	SW846	FGS SEA
5035	Closed System Purge and Trap	SW846	FGS SEA

Protocol References:

ASTM = ASTM International

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Sample Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-105806-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-105806-1	MW-21_5.2_20210909	Solid	09/09/21 16:50	09/13/21 10:35
580-105806-2	MW-21_10_20210909	Solid	09/10/21 11:18	09/13/21 10:35
580-105806-3	MW-21_15_20210909	Solid	09/10/21 11:35	09/13/21 10:35
580-105806-4	MW-21_20_20210909	Solid	09/10/21 11:52	09/13/21 10:35
580-105806-5	MW-21_25_20210909	Solid	09/10/21 11:55	09/13/21 10:35
580-105806-6	Trip Blank_20210909	Solid	09/09/21 00:01	09/13/21 10:35

bp rm

Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

Page 1 of 1

BP Site Node Path:	ARCO 980	Req Due Date (mm/dd/yy):	Standard TAT — Rush TAT Yes ___ No X
BP/RM Facility No:	ARCO Facility No. 00980	Lab Work Order Number:	105806

Lab Name:	Test America	BP/ARC Facility Address:	10822 Roosevelt Way NE	Consultant/Contractor:	Antea Group
Lab Address:	5755 8th Street East, Tacoma, WA 98424	City, State, ZIP Code:	Seattle, WA	Consultant/Contractor Project No:	~~00980SA201.20100~~ 00980SA211.20100 NH
Lab PM:	00980SA201.20100.MR	Lead Regulatory Agency:	Washington State Department of Ecology	Address:	2006 148th Ave NE, Redmond, WA 98052
Lab Phone:	253.248.4972	California Global ID No.:	NA	Consultant/Contractor PM:	Megan Richard
Lab Shipping Accnt:	NA	Enfos Proposal No:	009VH-0016/WR850198	Phone:	503-863-2114 Email: Megan.Richard@anteagroup.us
Lab Bottle Order No:	NA	Accounting Mode:	Provision X OOC-BU ___ OOC-RM ___	Send/Submit EDD to:	Megan.Richard@anteagroup.us
Other Info:	elaine.walker@Eurofinset.com	Stage	2_Select (20) Activity Additional Data Collection (100)	Invoice To:	BP-RM ___ BP/ARC X

BP/RM PM:	Wade Melton
PM Phone:	360-594-7978
PM Email:	wade.melton@bp.com

Sample Details / Requested Analyses / Report Type & QC Level: Limited (Standard) Package —; Limited Plus Package; Full Package

Lab No.	Sample Description	Date	Time	Field Matrix	Start Depth	End Depth	Depth Unit	Grab (G) or Composite (C)	Total Number of Containers	Analysis	BTEX by EPA 8260B	MTBE by EPA 8260B	n-hexane by EPA 8260B	NWTPH-Gx	NWTPH-Dx	Naphthalenes SIM 8270	Total lead by EPA 6000/7000	TPH-Dx by NWTPH-Dx (NH)					Comments
-6	Trip Blank																						
-1	MW-21_5.2_20210909	9/9/2021	1650	W				G	4		X	X	X	X	X	X	X	X					Samples in freezer at 1830 9/9/21
	MW-21_10_20210910	9/10/2021	1118	W				G	↓		X	X	X	X	X	X	X	X					Samples in freezer at 1500 9/10/21
-3	MW-21_15_20210910	9/10/2021	1135	W				G	↓		X	X	X	X	X	X	X	X					Samples in freezer at 1500 9/10/21
	MW-21_20_20210910	9/10/2021	1152	W				G	↓		X	X	X	X	X	X	X	X					Samples in freezer at 1500 9/10/21
-5	MW-21_25_20210910	9/10/2021	1155	W				G	↓		X	X	X	X	X	X	X	X					Samples in freezer at 1500 9/10/21
																							SH
																							SH

Sampler's Name:	Samantha Hinze / Nathan Han	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	Antea Group	[signature] / Antea Group	9.13.21	1035	[signature]	9/13/21	1035
Ship Method:	Courier Ship Date: 9/13/21						
Shipment Tracking No:							

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: ______ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Lg Blue / wet / bub
w/cs IR8 -0.8/-0.6
Lab Cou

BP LaMP Soil/H2O COC July 2018

580-105806 Chain of Custody

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Proprietary and Confidential
Property of BP and its Affiliates

Login Sample Receipt Checklist

Client: Antea USA Inc.

Job Number: 580-105806-1

Login Number: 105806
List Number: 1
Creator: Blankinship, Tom X

List Source: Eurofins FGS, 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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

GC/MS VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368657 Batch Start Date: 09/23/21 10:00 Batch Analyst: Johal, Amanpreet S

Batch Method: 5035 Batch End Date: 09/23/21 17:27

Lab Sample ID	Client Sample ID	Method Chain	Basis	TareWeight	Vial&SampleWt	InitialAmount	FinalAmount	VOAMasterMix 00072	VoaSand 00071
MB 580-368657/1		5035, 8260D				5 g	5 mL		5 g
LCS 580-368657/2		5035, 8260D				5 g	5 mL	2 uL	5 g
LCSD 580-368657/3		5035, 8260D				5 g	5 mL	2 uL	5 g
580-105806-B-1	MW-21_5.2_20210909	5035, 8260D	T	+025.875 g	32.06 g	6.185 g	5 mL		
580-105806-B-2	MW-21_10_20210909	5035, 8260D	T	+026.180 g	33.98 g	7.8 g	5 mL		
580-105806-B-3	MW-21_15_20210909	5035, 8260D	T	+026.264 g	32.82 g	6.556 g	5 mL		
580-105806-B-4	MW-21_20_20210909	5035, 8260D	T	+026.112 g	33.02 g	6.908 g	5 mL		
580-105806-B-5	MW-21_25_20210909	5035, 8260D	T	26.303 g	33.12 g	6.817 g	5 mL		
580-105806-C-1	MW-21_5.2_20210909	5035, 8260D	T	+025.999 g	32.53 g	6.531 g	5 mL		
580-105806-C-2	MW-21_10_20210909	5035, 8260D	T	+026.267 g	34.11 g	7.843 g	5 mL		
580-105806-C-3	MW-21_15_20210909	5035, 8260D	T	+025.915 g	32.35 g	6.435 g	5 mL		
580-105806-C-4	MW-21_20_20210909	5035, 8260D	T	+026.252 g	33.01 g	6.758 g	5 mL		
580-105806-C-5	MW-21_25_20210909	5035, 8260D	T	+025.708 g	32.28 g	6.572 g	5 mL		
580-105806-C-6	Trip Blank 20210909	5035, 8260D	T			5 g	5 mL		

Lab Sample ID	Client Sample ID	Method Chain	Basis	VOASTDGASweek 00082					
MB 580-368657/1		5035, 8260D							
LCS 580-368657/2		5035, 8260D		2 uL					
LCSD 580-368657/3		5035, 8260D		2 uL					
580-105806-B-1	MW-21_5.2_20210909	5035, 8260D	T						
580-105806-B-2	MW-21_10_20210909	5035, 8260D	T						
580-105806-B-3	MW-21_15_20210909	5035, 8260D	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC/MS VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368657 Batch Start Date: 09/23/21 10:00 Batch Analyst: Johal, Amanpreet S

Batch Method: 5035 Batch End Date: 09/23/21 17:27

Lab Sample ID	Client Sample ID	Method Chain	Basis	VOASTDGASweek 00082					
580-105806-B-4	MW-21_20_20210909	5035, 8260D	T						
580-105806-B-5	MW-21_25_20210909	5035, 8260D	T						
580-105806-C-1	MW-21_5.2_20210909	5035, 8260D	T						
580-105806-C-2	MW-21_10_20210909	5035, 8260D	T						
580-105806-C-3	MW-21_15_20210909	5035, 8260D	T						
580-105806-C-4	MW-21_20_20210909	5035, 8260D	T						
580-105806-C-5	MW-21_25_20210909	5035, 8260D	T						
580-105806-C-6	Trip Blank_20210909	5035, 8260D	T						

Batch Notes	
Balance ID	sea239
Batch Comment	2574842
Blank Matrix ID	2929895
Pipette/Syringe/Dispenser ID	bt4
Vial Lot Number	0204201g

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368416 Batch Start Date: 09/21/21 11:02 Batch Analyst: Cox, Casey R

Batch Method: 3546 Batch End Date: 09/23/21 23:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	8270flspk 00288	8270Surr_Phen 00014		
MB 580-368416/1		3546, 8270E SIM		10 g	10 mL		100 uL		
LCS 580-368416/2		3546, 8270E SIM		10 g	10 mL	500 uL	100 uL		
580-105806-D-1	MW-21_5.2_20210909	3546, 8270E SIM	T	10.39 g	10 mL		100 uL		

Batch Notes	
Balance ID	SEA 240
Batch Comment	Hydromatrix: 2804022 Vialed by: RBL
Blank Matrix ID	2963425
Analyst ID - Concentration	RBL
Concentration 1 Corrected Temperature	70.3-75.3 Degrees C
Equipment ID - Concentration 1	steam bath 1
Analyst ID - Extraction	CC
Filter ID	2815023
Method/Fraction	3546/8270E_SIM_DOD5/8270E/8270E_SIM
Microwave Oven ID	Mars 1
Microwave Program ID	Fuels 01 xpress
Na2SO4 ID	2400318/2953663
Pipette/Syringe/Dispenser ID	MP4/E6
Prep Solvent ID	2959739
Analyst ID - Spike Analyst	CC
Analyst ID - Spike Witness Analyst	RL
Sufficient Volume for Batch QC	yes
Thermometer ID - Concentration 1	61013-040-1
Concentration 1 Uncorrected Temperature	70-75 Degrees C
Vial Lot Number	24158478

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368650 Batch Start Date: 09/23/21 11:17 Batch Analyst: Cox, Casey R

Batch Method: 3546 Batch End Date: 09/24/21 17:23

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	8270flspk 00288	8270Surr_Phen 00014		
MB 580-368650/1		3546, 8270E SIM		10 g	10 mL		100 uL		
LCS 580-368650/2		3546, 8270E SIM		10 g	10 mL	500 uL	100 uL		
580-105806-D-2	MW-21_10_20210909	3546, 8270E SIM	T	10.59 g	10 mL		100 uL		
580-105806-D-3	MW-21_15_20210909	3546, 8270E SIM	T	10.40 g	10 mL		100 uL		
580-105806-D-4	MW-21_20_20210909	3546, 8270E SIM	T	10.54 g	10 mL		100 uL		
580-105806-D-5	MW-21_25_20210909	3546, 8270E SIM	T	10.73 g	10 mL		100 uL		

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368650 Batch Start Date: 09/23/21 11:17 Batch Analyst: Cox, Casey R

Batch Method: 3546 Batch End Date: 09/24/21 17:23

Batch Notes	
Balance ID	SEA 240
Batch Comment	Hydromatrix: 2804022 Vialed by: AP
Blank Matrix ID	2963426
Analyst ID - Concentration	AP
Concentration 1 Corrected Temperature	75.3-80.3 Degrees C
Equipment ID - Concentration 1	steam bath 1
Analyst ID - Extraction	CC
Filter ID	2815023
Method/Fraction	8270E_SIM
Microwave Oven ID	Mars 1
Microwave Program ID	Fuels 01 xpress
Na2SO4 ID	2400318
Pipette/Syringe/Dispenser ID	MP4/E6
Prep Solvent ID	2959739/2953662
Analyst ID - Spike Analyst	CC
Analyst ID - Spike Witness Analyst	CH
Sufficient Volume for Batch QC	yes
Thermometer ID - Concentration 1	61013-040-1
Concentration 1 Uncorrected Temperature	75-80 Degrees C
Vial Lot Number	24158478

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368205 Batch Start Date: 09/18/21 16:25 Batch Analyst: Tucker, Jonathon B

Batch Method: 5035 Batch End Date: 09/18/21 16:34

Lab Sample ID	Client Sample ID	Method Chain	Basis	TareWeight	Vial&SampleWt	MeOHSubtraction	MeOHVol	InitialAmount	FinalAmount
MB 580-368205/1		5035, NWTPH-Gx						10 g	10 mL
LCS 580-368205/2		5035, NWTPH-Gx						10 g	10 mL
LCSD 580-368205/3		5035, NWTPH-Gx						10 g	10 mL
580-105806-A-1	MW-21_5.2_20210909	5035, NWTPH-Gx	T	+031.126 g	43.97 g	No	10 mL	12.844 g	10 mL
580-105806-A-2	MW-21_10_20210909	5035, NWTPH-Gx	T	+031.423 g	46.19 g	No	10 mL	14.767 g	10 mL
580-105806-A-3	MW-21_15_20210909	5035, NWTPH-Gx	T	+031.399 g	44.73 g	No	10 mL	13.331 g	10 mL
580-105806-A-4	MW-21_20_20210909	5035, NWTPH-Gx	T	+031.153 g	44.87 g	No	10 mL	13.717 g	10 mL
580-105806-A-5	MW-21_25_20210909	5035, NWTPH-Gx	T	+031.476 g	43.97 g	No	10 mL	12.494 g	10 mL
580-105806-A-6	Trip Blank 20210909	5035, NWTPH-Gx	T			No	10 mL	10 g	10 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	GRO_LCS 00068	V2.4TFT-EX 00070	VoaSand 00071			
MB 580-368205/1		5035, NWTPH-Gx			10 mL	10 g			
LCS 580-368205/2		5035, NWTPH-Gx		200 uL	10 mL	10 g			
LCSD 580-368205/3		5035, NWTPH-Gx		200 uL	10 mL	10 g			
580-105806-A-1	MW-21_5.2_20210909	5035, NWTPH-Gx	T						
580-105806-A-2	MW-21_10_20210909	5035, NWTPH-Gx	T						
580-105806-A-3	MW-21_15_20210909	5035, NWTPH-Gx	T						
580-105806-A-4	MW-21_20_20210909	5035, NWTPH-Gx	T						
580-105806-A-5	MW-21_25_20210909	5035, NWTPH-Gx	T						
580-105806-A-6	Trip Blank 20210909	5035, NWTPH-Gx	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368205 Batch Start Date: 09/18/21 16:25 Batch Analyst: Tucker, Jonathon B

Batch Method: 5035 Batch End Date: 09/18/21 16:34

Batch Notes	
Balance ID	sea239
Batch Comment	2574842
Blank Matrix ID	2929895
Pipette/Syringe/Dispenser ID	bt7
Vial Lot Number	0204201G

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368282 Batch Start Date: 09/20/21 11:30 Batch Analyst: Cox, Casey R

Batch Method: 3546 Batch End Date: 09/21/21 16:37

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	TPH Spike_RZ 00107	TPH_SURR 00061		
MB 580-368282/1		3546, NWTPH-Dx		10 g	10 mL		100 uL		
LCS 580-368282/2		3546, NWTPH-Dx		10 g	10 mL	100 uL	100 uL		
LCSD 580-368282/3		3546, NWTPH-Dx		10 g	10 mL	100 uL	100 uL		
580-105806-D-1	MW-21_5.2_20210909	3546, NWTPH-Dx	T	10.75 g	10 mL		100 uL		

Batch Notes	
Balance ID	SEA 240
Batch Comment	Hydromatrix: 2804022 Vialed by: CC
Blank Matrix ID	2963425
Analyst ID - Concentration	CC
Concentration 1 Corrected Temperature	70.3-75.3 Degrees C
Equipment ID - Concentration 1	steam bath 1
Analyst ID - Extraction	CC
Filter ID	2815023
Method/Fraction	AK102_103/NWTPH_Dx/8015D_DRO_DOD5
Microwave Oven ID	Mars 1
Microwave Program ID	Fuels 01 xpress
Na2SO4 ID	2400318
Pipette/Syringe/Dispenser ID	MP4
Prep Solvent ID	2959739
Analyst ID - Spike Analyst	CC
Analyst ID - Spike Witness Analyst	PS
Sufficient Volume for Batch QC	yes
Thermometer ID - Concentration 1	61013-040-1
Concentration 1 Uncorrected Temperature	70-75 Degrees C
Vial Lot Number	24158478

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368282 Batch Start Date: 09/20/21 11:30 Batch Analyst: Cox, Casey R

Batch Method: 3546 Batch End Date: 09/21/21 16:37

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368627 Batch Start Date: 09/23/21 09:53 Batch Analyst: Cox, Casey R

Batch Method: 3546 Batch End Date: 09/24/21 14:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	TPH Spike_RZ 00107	TPH_SURR 00061		
MB 580-368627/1		3546, NWTPH-Dx		10 g	10 mL		100 uL		
LCS 580-368627/2		3546, NWTPH-Dx		10 g	10 mL	100 uL	100 uL		
580-105806-D-2	MW-21_10_20210909	3546, NWTPH-Dx	T	10.06 g	10 mL		100 uL		
580-105806-D-3	MW-21_15_20210909	3546, NWTPH-Dx	T	10.24 g	10 mL		100 uL		
580-105806-D-4	MW-21_20_20210909	3546, NWTPH-Dx	T	10.21 g	10 mL		100 uL		

Batch Notes	
Balance ID	SEA 240
Batch Comment	Hydromatrix: 2804022 Vialed by: CC
Blank Matrix ID	2963426
Analyst ID - Concentration	CC
Concentration 1 Corrected Temperature	70.3-75.3 Degrees C
Equipment ID - Concentration 1	steam bath 1
Analyst ID - Extraction	CC
Filter ID	2815023
Method/Fraction	NWTPH_Dx
Microwave Oven ID	Mars 1
Microwave Program ID	Fuels 01 xpress
Na2SO4 ID	2400318
Pipette/Syringe/Dispenser ID	MP4
Prep Solvent ID	2959739
Analyst ID - Spike Analyst	CC
Analyst ID - Spike Witness Analyst	AP
Sufficient Volume for Batch QC	yes
Thermometer ID - Concentration 1	61013-040-1
Concentration 1 Uncorrected Temperature	70-75 Degrees C
Vial Lot Number	24158478

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368627 Batch Start Date: 09/23/21 09:53 Batch Analyst: Cox, Casey R

Batch Method: 3546 Batch End Date: 09/24/21 14:30

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368793 Batch Start Date: 09/24/21 14:32 Batch Analyst: Cox, Casey R

Batch Method: 3546 Batch End Date: 09/27/21 00:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	TPH Spike_RZ 00107	TPH_SURR 00061	AnalysisComment	
MB 580-368793/1		3546, NWTPH-Dx		10 g	10 mL		100 uL	Spilled after being vialed	
LCS 580-368793/2		3546, NWTPH-Dx		10 g	10 mL	100 uL	100 uL		
LCSD 580-368793/3		3546, NWTPH-Dx		10 g	10 mL	100 uL	100 uL		
580-105806-D-5	MW-21_25_20210909	3546, NWTPH-Dx	T	10.20 g	10 mL		100 uL		

Batch Notes	
Balance ID	SEA 240
Batch Comment	Hydromatrix: 2804022 Vialed by: RBL
Blank Matrix ID	2963426
Analyst ID - Concentration	RBL
Concentration 1 Corrected Temperature	70.3-75.3 Degrees C
Equipment ID - Concentration 1	steam bath 1
Analyst ID - Extraction	CC
Filter ID	2815023
Method/Fraction	3546/NWTPH_Dx
Microwave Oven ID	Mars 1
Microwave Program ID	Fuels 01 xpress
Na2SO4 ID	2400318
Pipette/Syringe/Dispenser ID	MP4
Prep Solvent ID	2959739
Analyst ID - Spike Analyst	CC
Analyst ID - Spike Witness Analyst	AP
Sufficient Volume for Batch QC	yes
Thermometer ID - Concentration 1	61013-040-1
Concentration 1 Uncorrected Temperature	70-75 Degrees C
Vial Lot Number	24158478

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368793 Batch Start Date: 09/24/21 14:32 Batch Analyst: Cox, Casey R

Batch Method: 3546 Batch End Date: 09/27/21 00:00

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368057 Batch Start Date: 09/16/21 16:30 Batch Analyst: Hua, Tammy M

Batch Method: 3050B Batch End Date: 09/17/21 12:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ICP CAL 1 00012	ICP CAL 2 00011	MET Spike 3C 00032	
580-105806-D-1	MW-21_5.2_20210909	3050B, 6020B	T	1.8190 g	50 mL				
580-105806-D-1 DU	MW-21_5.2_20210909	3050B, 6020B	T	1.8314 g	50 mL				
580-105806-D-1 MS	MW-21_5.2_20210909	3050B, 6020B	T	1.8028 g	50 mL	0.5 mL	0.5 mL	0.5 mL	
580-105806-D-1 MSD	MW-21_5.2_20210909	3050B, 6020B	T	1.8222 g	50 mL	0.5 mL	0.5 mL	0.5 mL	
580-105806-D-2	MW-21_10_20210909	3050B, 6020B	T	1.6385 g	50 mL				
580-105806-D-3	MW-21_15_20210909	3050B, 6020B	T	1.9855 g	50 mL				
580-105806-D-4	MW-21_20_20210909	3050B, 6020B	T	1.7560 g	50 mL				
580-105806-D-5	MW-21_25_20210909	3050B, 6020B	T	1.5692 g	50 mL				
MB 580-368057/22		3050B, 6020B		1.0 g	50 mL				
LCS 580-368057/23		3050B, 6020B		1.0 g	50 mL	0.5 mL	0.5 mL	0.5 mL	
LCSD 580-368057/24		3050B, 6020B		1.0 g	50 mL	0.5 mL	0.5 mL	0.5 mL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368057 Batch Start Date: 09/16/21 16:30 Batch Analyst: Hua, Tammy M

Batch Method: 3050B Batch End Date: 09/17/21 12:00

Batch Notes	
Balance ID	sea241
Blank Soil Lot Number	2062632
Temperature - Corrected - End	91.1 Degrees C
Temperature - Corrected - Start	91.1 Degrees C
Digestion End Time	09/17/2021 12:00
Digestion Start Time	09/17/2021 11:00
Digestion Unit ID	Block E
Digestion Tube/Cup ID	2911754
Filter ID	whatman lot# 17115468
Hydrogen Peroxide ID	2950435
Hydrochloric Acid ID	2954788
Nitric Acid ID	2954797
Nominal Amount Used	1.0 g
Pipette/Syringe/Dispenser ID	metals prep 2
Analyst ID - Spike Analyst	cmk
Analyst ID - Spike Witness Analyst	cmk
Sufficient Volume for Batch QC	yes
Thermometer Location ID	E37
Thermometer ID	700396
Temperature - Uncorrected - End	91.0 Degrees C
Temperature - Uncorrected - Start	91.0 Degrees C

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-105806-1

SDG No.:

Batch Number: 368371 Batch Start Date: 09/20/21 21:05 Batch Analyst: Roberts, Jacob H

Batch Method: D 2216 Batch End Date: 09/21/21 20:20

Lab Sample ID	Client Sample ID	Method Chain	Basis	DishWeight	SampleMassWet	SampleMassDry	%_Moisture	%_Solid	
580-105806-D-1	MW-21_5.2_20210909	D 2216	T	0.817 g	8.922 g	8.241 g	8.4022208513263 1 %	91.597779148673 7 %	
580-105806-D-2	MW-21_10_20210909	D 2216	T	0.822 g	10.008 g	9.043 g	10.505116481602 4 %	89.494883518397 6 %	
580-105806-D-3	MW-21_15_20210909	D 2216	T	0.823 g	10.650 g	9.885 g	7.7846748753434 %	92.215325124656 6 %	
580-105806-D-4	MW-21_20_20210909	D 2216	T	0.825 g	8.864 g	8.246 g	7.6875233237965 %	92.312476676203 5 %	
580-105806-D-4 DU	MW-21_20_20210909	D 2216	T	0.835 g	8.339 g	7.786 g	7.3694029850746 %	92.630597014925 4 %	
580-105806-D-5	MW-21_25_20210909	D 2216	T	0.823 g	10.253 g	9.305 g	10.053022269353 1 %	89.946977730646 9 %	

Batch Notes	
Balance ID	Sea 232
Date samples were placed in the oven	09/20/2021
Oven Temp In	116.6 Degrees C
Time samples were place in the oven	21:39
Date samples were removed from oven	09/21/2021
Oven Temp Out	117.0 Degrees C
Time Samples were removed from oven	20:13
Oven ID	Oven 2
Thermometer ID	Digital readout
Temperature - Start - Uncorrected	109.8 Degrees C
Temperature - End - Uncorrected	110.2 Degrees C

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Appendix E - Groundwater Laboratory Analytical Report and Chain-of-Custody Documentation

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ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-106358-1
Client Project/Site: BP -ARCO 980
Sampling Event: Antea ARCO 980

For:
Antea USA Inc.
4006 148th Ave NE
Redmond, Washington 98052

Attn: Megan Richard

M. Elaine Walker

Authorized for release by:
10/21/2021 11:09:20 AM

Elaine Walker, Project Manager II
(253)248-4972
m.elaine.walker@eurofinset.com

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the BPLAMP Technical Specifications, applicable federal, state, local regulations and certification requirements as well as the methodologies as described in laboratory SOPs reviewed by the BPLAMP. This Laboratory Report is confidential and is intended for the sole use of Eurofins TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The signature on the cover page extends to the case narrative and all the data and forms in the package. The Chain of Custody is included and is an integral part of this report.

Elaine Walker
Project Manager II
10/21/2021 11:09:20 AM

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Definitions/Glossary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
S1-	Surrogate recovery exceeds control limits, low biased.

GC Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

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

Job ID: 580-106358-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative
580-106358-1

Receipt
Five samples were received on 10/1/2021 2:30 PM. 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 0.1º C.

Receipt Exceptions

The container labels for all client samples samples did not match the information listed on the Chain-of-Custody (COC): MW-4_20210928 (580-106358-1), MW-12_20210928 (580-106358-2), MW-13_20210928 (580-106358-3), MW-20_20210928 (580-106358-4) and MW-21_20210928 (580-106358-5). The container labels have a date suffix on all IDs but the COC does not. The samples are logged in per the container labels.

A trip blank is listed on the chain of custody but a trip blank was not received.

GC/MS VOA
Method 8260D: Surrogate recovery for the following sample was outside control limits: MW-12_20210928 (580-106358-2). Based on review of the sample chromatography, evidence of matrix interference is present; 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 VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA
Method 3510C: The following samples were re-prepared outside of preparation holding time due to high motor oil analyte concentration in quality control samples :MW-4_20210928 (580-106358-1), MW-12_20210928 (580-106358-2), MW-20_20210928 (580-106358-4) and MW-21_20210928 (580-106358-5). Both sets of data have been reported.

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

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

Detection Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

Client Sample ID: MW-4_20210928 — Lab Sample ID: 580-106358-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
#2 Diesel (C10-C24)	540		110		ug/L	1		NWTPH-Dx	Total/NA
Motor Oil (>C24-C36)	870	*+	330		ug/L	1		NWTPH-Dx	Total/NA
Motor Oil (>C24-C36) - RE	500	H	330		ug/L	1		NWTPH-Dx	Total/NA

Client Sample ID: MW-12_20210928 — Lab Sample ID: 580-106358-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
#2 Diesel (C10-C24)	1400		110		ug/L	1		NWTPH-Dx	Total/NA
Motor Oil (>C24-C36)	750	*+	340		ug/L	1		NWTPH-Dx	Total/NA
Motor Oil (>C24-C36) - RE	500	H	340		ug/L	1		NWTPH-Dx	Total/NA

Client Sample ID: MW-13_20210928 — Lab Sample ID: 580-106358-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	27		1.0		ug/L	1		8260D	Total/NA
Toluene	1.0		1.0		ug/L	1		8260D	Total/NA
Ethylbenzene	8.8		1.0		ug/L	1		8260D	Total/NA
m-Xylene & p-Xylene	5.0		2.0		ug/L	1		8260D	Total/NA
o-Xylene	11		1.0		ug/L	1		8260D	Total/NA
Xylenes, Total	16		2.0		ug/L	1		8260D	Total/NA
Gasoline	880		250		ug/L	1		NWTPH-Gx	Total/NA
#2 Diesel (C10-C24)	2300		110		ug/L	1		NWTPH-Dx	Total/NA
Motor Oil (>C24-C36)	1400		340		ug/L	1		NWTPH-Dx	Total/NA

Client Sample ID: MW-20_20210928 — Lab Sample ID: 580-106358-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
#2 Diesel (C10-C24)	160		110		ug/L	1		NWTPH-Dx	Total/NA
Motor Oil (>C24-C36)	390	*+	340		ug/L	1		NWTPH-Dx	Total/NA

Client Sample ID: MW-21_20210928 — Lab Sample ID: 580-106358-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
#2 Diesel (C10-C24)	350		110		ug/L	1		NWTPH-Dx	Total/NA
Motor Oil (>C24-C36)	510	*+	340		ug/L	1		NWTPH-Dx	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-4_20210928

Lab Sample ID: 580-106358-1
Matrix: Water
Date Collected: 09/28/21 12:30
Date Received: 10/01/21 14:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		1.0		ug/L			10/12/21 18:30	1
Benzene	ND		1.0		ug/L			10/12/21 18:30	1
Toluene	ND		1.0		ug/L			10/12/21 18:30	1
Ethylbenzene	ND		1.0		ug/L			10/12/21 18:30	1
m-Xylene & p-Xylene	ND		2.0		ug/L			10/12/21 18:30	1
o-Xylene	ND		1.0		ug/L			10/12/21 18:30	1
Xylenes, Total	ND		2.0		ug/L			10/12/21 18:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*80 - 120*		*10/12/21 18:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 120*		*10/12/21 18:30*	*1*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*10/12/21 18:30*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*10/12/21 18:30*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			10/04/21 16:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*50 - 150*		*10/04/21 16:57*	*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)	**540**		110		ug/L		10/04/21 14:50	10/06/21 20:19	1
Motor Oil (>C24-C36)	**870**	*+	330		ug/L		10/04/21 14:50	10/06/21 20:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*84*		*50 - 150*	*10/04/21 14:50*	*10/06/21 20:19*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil (>C24-C36)	**500**	H	330		ug/L		10/15/21 10:21	10/17/21 02:17	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.0		ug/L		10/04/21 17:54	10/05/21 11:48	5

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.0		ug/L		10/07/21 17:13	10/08/21 13:57	5

Client Sample ID: MW-12_20210928

Lab Sample ID: 580-106358-2
Matrix: Water
Date Collected: 09/28/21 16:00
Date Received: 10/01/21 14:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		1.0		ug/L			10/12/21 18:55	1
Benzene	ND		1.0		ug/L			10/12/21 18:55	1
Toluene	ND		1.0		ug/L			10/12/21 18:55	1
Ethylbenzene	ND		1.0		ug/L			10/12/21 18:55	1
m-Xylene & p-Xylene	ND		2.0		ug/L			10/12/21 18:55	1

Client Sample ID: MW-12_20210928

Lab Sample ID: 580-106358-2

Date Collected: 09/28/21 16:00

Matrix: Water

Date Received: 10/01/21 14:30

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		ug/L			10/12/21 18:55	1
Xylenes, Total	ND		2.0		ug/L			10/12/21 18:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*109*		*80 - 120*		*10/12/21 18:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*10/12/21 18:55*	*1*
4-Bromofluorobenzene (Surr)	*74*	*S1-*	*80 - 120*		*10/12/21 18:55*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*10/12/21 18:55*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			10/04/21 17:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*50 - 150*		*10/04/21 17:21*	*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)	**1400**		110		ug/L		10/04/21 14:50	10/06/21 20:39	1
Motor Oil (>C24-C36)	**750**	***+**	340		ug/L		10/04/21 14:50	10/06/21 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*84*		*50 - 150*	*10/04/21 14:50*	*10/06/21 20:39*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil (>C24-C36)	**500**	**H**	340		ug/L		10/15/21 10:21	10/17/21 02:36	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.0		ug/L		10/04/21 17:54	10/05/21 11:44	5

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.0		ug/L		10/07/21 17:13	10/08/21 14:01	5

Client Sample ID: MW-13_20210928

Lab Sample ID: 580-106358-3

Date Collected: 09/28/21 14:55

Matrix: Water

Date Received: 10/01/21 14:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		1.0		ug/L			10/12/21 19:20	1
Benzene	**27**		1.0		ug/L			10/12/21 19:20	1
Toluene	**1.0**		1.0		ug/L			10/12/21 19:20	1
Ethylbenzene	**8.8**		1.0		ug/L			10/12/21 19:20	1
m-Xylene & p-Xylene	**5.0**		2.0		ug/L			10/12/21 19:20	1
o-Xylene	**11**		1.0		ug/L			10/12/21 19:20	1
Xylenes, Total	**16**		2.0		ug/L			10/12/21 19:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*118*		*80 - 120*		*10/12/21 19:20*	*1*

Client Sample ID: MW-13_20210928

Lab Sample ID: 580-106358-3
Matrix: Water
Date Collected: 09/28/21 14:55
Date Received: 10/01/21 14:30

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*80 - 120*		*10/12/21 19:20*	*1*
4-Bromofluorobenzene (Surr)	*83*		*80 - 120*		*10/12/21 19:20*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*10/12/21 19:20*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**880**		250		ug/L			10/04/21 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*139*		*50 - 150*		*10/04/21 17:46*	*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)	**2300**		110		ug/L		10/06/21 11:33	10/08/21 05:22	1
Motor Oil (>C24-C36)	**1400**		340		ug/L		10/06/21 11:33	10/08/21 05:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*78*		*50 - 150*	*10/06/21 11:33*	*10/08/21 05:22*	*1*

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.0		ug/L		10/04/21 17:54	10/05/21 12:51	5

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.0		ug/L		10/07/21 17:13	10/08/21 14:05	5

Client Sample ID: MW-20_20210928

Lab Sample ID: 580-106358-4
Matrix: Water
Date Collected: 09/28/21 11:15
Date Received: 10/01/21 14:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		1.0		ug/L			10/12/21 19:45	1
Benzene	ND		1.0		ug/L			10/12/21 19:45	1
Toluene	ND		1.0		ug/L			10/12/21 19:45	1
Ethylbenzene	ND		1.0		ug/L			10/12/21 19:45	1
m-Xylene & p-Xylene	ND		2.0		ug/L			10/12/21 19:45	1
o-Xylene	ND		1.0		ug/L			10/12/21 19:45	1
Xylenes, Total	ND		2.0		ug/L			10/12/21 19:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 120*		*10/12/21 19:45*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 120*		*10/12/21 19:45*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*10/12/21 19:45*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*10/12/21 19:45*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			10/04/21 18:11	1

Client Sample ID: MW-20_20210928

Lab Sample ID: 580-106358-4

Date Collected: 09/28/21 11:15
Matrix: Water
Date Received: 10/01/21 14:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*93*		*50 - 150*		*10/04/21 18:11*	*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)	**160**		110		ug/L		10/04/21 14:50	10/06/21 21:37	1
Motor Oil (>C24-C36)	**390**	*+	340		ug/L		10/04/21 14:50	10/06/21 21:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	*84*		*50 - 150*	*10/04/21 14:50*	*10/06/21 21:37*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil (>C24-C36)	ND	H	330		ug/L		10/15/21 10:21	10/17/21 02:56	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.0		ug/L		10/04/21 17:54	10/05/21 12:55	5

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.0		ug/L		10/07/21 17:13	10/08/21 14:09	5

Client Sample ID: MW-21_20210928

Lab Sample ID: 580-106358-5

Date Collected: 09/28/21 10:30
Matrix: Water
Date Received: 10/01/21 14:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		1.0		ug/L			10/12/21 20:10	1
Benzene	ND		1.0		ug/L			10/12/21 20:10	1
Toluene	ND		1.0		ug/L			10/12/21 20:10	1
Ethylbenzene	ND		1.0		ug/L			10/12/21 20:10	1
m-Xylene & p-Xylene	ND		2.0		ug/L			10/12/21 20:10	1
o-Xylene	ND		1.0		ug/L			10/12/21 20:10	1
Xylenes, Total	ND		2.0		ug/L			10/12/21 20:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*99*		*80 - 120*		*10/12/21 20:10*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*10/12/21 20:10*	*1*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*10/12/21 20:10*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*10/12/21 20:10*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			10/04/21 18:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*92*		*50 - 150*		*10/04/21 18:35*	*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)	**350**		110		ug/L		10/04/21 14:50	10/06/21 21:57	1
Motor Oil (>C24-C36)	**510**	*+	340		ug/L		10/04/21 14:50	10/06/21 21:57	1

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

Client Sample ID: MW-21_20210928

Date Collected: 09/28/21 10:30
Date Received: 10/01/21 14:30

Lab Sample ID: 580-106358-5

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*86*		*50 - 150*	*10/04/21 14:50*	*10/06/21 21:57*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil (>C24-C36)	ND	H	330		ug/L		10/15/21 10:21	10/17/21 03:35	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.0		ug/L		10/04/21 17:54	10/05/21 12:58	5

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.0		ug/L		10/07/21 17:13	10/08/21 14:12	5

Surrogate Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)	(80-120)
580-106358-1	MW-4_20210928	104	95	98	102
580-106358-2	MW-12_20210928	109	100	74 S1-	101
580-106358-3	MW-13_20210928	118	94	83	98
580-106358-4	MW-20_20210928	101	95	96	102
580-106358-5	MW-21_20210928	99	100	97	102
LCS 580-370272/4	Lab Control Sample	102	96	100	102
LCSD 580-370272/5	Lab Control Sample Dup	101	98	99	98
MB 580-370272/7	Method Blank	101	95	89	96

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Matrix: Water | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		BFB2
Lab Sample ID	Client Sample ID	(50-150)
580-106358-1	MW-4_20210928	95
580-106358-2	MW-12_20210928	104
580-106358-3	MW-13_20210928	139
580-106358-4	MW-20_20210928	93
580-106358-5	MW-21_20210928	92
LCS 580-369517/4	Lab Control Sample	108
LCSD 580-369517/5	Lab Control Sample Dup	108
MB 580-369517/3	Method Blank	91

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Matrix: Water | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		OTPH
Lab Sample ID	Client Sample ID	(50-150)
580-106358-1	MW-4_20210928	84
580-106358-2	MW-12_20210928	84
580-106358-3	MW-13_20210928	78
580-106358-4	MW-20_20210928	84
580-106358-5	MW-21_20210928	86
LCS 580-369572/2-A	Lab Control Sample	110
LCS 580-369768/2-A	Lab Control Sample	89
LCS 580-370640/2-A	Lab Control Sample	92
LCSD 580-369572/3-A	Lab Control Sample Dup	98
LCSD 580-369768/3-A	Lab Control Sample Dup	74
LCSD 580-370640/3-A	Lab Control Sample Dup	87
MB 580-369572/1-A	Method Blank	77

Surrogate Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	OTPH (50-150)							
MB 580-369768/1-A	Method Blank	74							
MB 580-370640/1-A	Method Blank	69							

Surrogate Legend

OTPH = o-Terphenyl

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-370272/7
Matrix: Water
Analysis Batch: 370272

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		1.0		ug/L			10/12/21 11:50	1
Benzene	ND		1.0		ug/L			10/12/21 11:50	1
Toluene	ND		1.0		ug/L			10/12/21 11:50	1
Ethylbenzene	ND		1.0		ug/L			10/12/21 11:50	1
m-Xylene & p-Xylene	ND		2.0		ug/L			10/12/21 11:50	1
o-Xylene	ND		1.0		ug/L			10/12/21 11:50	1
Xylenes, Total	ND		2.0		ug/L			10/12/21 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 120*		*10/12/21 11:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 120*		*10/12/21 11:50*	*1*
4-Bromofluorobenzene (Surr)	*89*		*80 - 120*		*10/12/21 11:50*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*		*10/12/21 11:50*	*1*

Lab Sample ID: LCS 580-370272/4
Matrix: Water
Analysis Batch: 370272

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methyl tert-butyl ether			10.0	9.16		ug/L		92	72 - 120		
Benzene			10.0	8.69		ug/L		87	80 - 122		
Toluene			10.0	9.28		ug/L		93	80 - 120		
Ethylbenzene			10.0	9.61		ug/L		96	80 - 120		
m-Xylene & p-Xylene			10.0	9.79		ug/L		98	80 - 120		
o-Xylene			10.0	9.23		ug/L		92	80 - 120		
Xylenes, Total			20.0	19.0		ug/L		95	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*96*		*80 - 120*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 120*

Lab Sample ID: LCSD 580-370272/5
Matrix: Water
Analysis Batch: 370272

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
Methyl tert-butyl ether			10.0	9.16		ug/L		92	72 - 120	0	18
Benzene			10.0	9.14		ug/L		91	80 - 122	5	14
Toluene			10.0	9.05		ug/L		90	80 - 120	3	13
Ethylbenzene			10.0	9.65		ug/L		97	80 - 120	0	14
m-Xylene & p-Xylene			10.0	9.86		ug/L		99	80 - 120	1	14
o-Xylene			10.0	9.06		ug/L		91	80 - 120	2	16
Xylenes, Total			20.0	18.9		ug/L		95	80 - 120	1	16

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

Lab Sample ID: LCSD 580-370272/5
Matrix: Water
Analysis Batch: 370272

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	98		80 - 120
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-369517/3
Matrix: Water
Analysis Batch: 369517

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			10/04/21 11:39	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		50 - 150		10/04/21 11:39	1

Lab Sample ID: LCS 580-369517/4
Matrix: Water
Analysis Batch: 369517

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	1000	992		ug/L		99	79 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	108		50 - 150

Lab Sample ID: LCSD 580-369517/5
Matrix: Water
Analysis Batch: 369517

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
Gasoline	1000	967		ug/L		97	79 - 120	3	10

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	108		50 - 150

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-369572/1-A
Matrix: Water
Analysis Batch: 369738

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 369572

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		10/04/21 14:50	10/06/21 19:20	1
Motor Oil (>C24-C36)	ND		350		ug/L		10/04/21 14:50	10/06/21 19:20	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: MB 580-369572/1-A
Matrix: Water
Analysis Batch: 369738

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 369572

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	77		50 - 150	10/04/21 14:50	10/06/21 19:20	1

Lab Sample ID: LCS 580-369572/2-A
Matrix: Water
Analysis Batch: 369738

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 369572

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
#2 Diesel (C10-C24)			2000	2200		ug/L		110	50 - 120		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	110		50 - 150

Lab Sample ID: LCSD 580-369572/3-A
Matrix: Water
Analysis Batch: 369738

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 369572

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			2000	2120		ug/L		106	50 - 120	4	26

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	98		50 - 150

Lab Sample ID: MB 580-369768/1-A
Matrix: Water
Analysis Batch: 369969

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 369768

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		10/06/21 11:33	10/08/21 00:41	1
Motor Oil (>C24-C36)	ND		350		ug/L		10/06/21 11:33	10/08/21 00:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	74		50 - 150	10/06/21 11:33	10/08/21 00:41	1

Lab Sample ID: LCS 580-369768/2-A
Matrix: Water
Analysis Batch: 369969

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 369768

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
#2 Diesel (C10-C24)			2000	1600		ug/L		80	50 - 120		
Motor Oil (>C24-C36)			2000	1750		ug/L		87	64 - 120		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	89		50 - 150

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCSD 580-369768/3-A
Matrix: Water
Analysis Batch: 369969

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 369768

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			2000	1450		ug/L		72	50 - 120	10	26
Motor Oil (>C24-C36)			2000	1720		ug/L		86	64 - 120	2	24

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*74*		*50 - 150*

Lab Sample ID: MB 580-370640/1-A
Matrix: Water
Analysis Batch: 370811

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 370640

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		10/15/21 10:21	10/17/21 01:17	1
Motor Oil (>C24-C36)	ND		350		ug/L		10/15/21 10:21	10/17/21 01:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*69*		*50 - 150*	*10/15/21 10:21*	*10/17/21 01:17*	*1*

Lab Sample ID: LCS 580-370640/2-A
Matrix: Water
Analysis Batch: 370811

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 370640

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
#2 Diesel (C10-C24)			2000	1560		ug/L		78	50 - 120
Motor Oil (>C24-C36)			2000	1890		ug/L		95	64 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*92*		*50 - 150*

Lab Sample ID: LCSD 580-370640/3-A
Matrix: Water
Analysis Batch: 370811

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 370640

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			2000	1520		ug/L		76	50 - 120	2	26
Motor Oil (>C24-C36)			2000	1880		ug/L		94	64 - 120	1	24

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*87*		*50 - 150*

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-369605/24-A
Matrix: Water
Analysis Batch: 369728

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 369605

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.40		ug/L		10/04/21 17:54	10/05/21 11:41	1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 580-369605/25-A
Matrix: Water
Analysis Batch: 369728

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 369605

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead			1000	955		ug/L		95	80 - 120		

Lab Sample ID: LCSD 580-369605/26-A
Matrix: Water
Analysis Batch: 369728

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 369605

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead			1000	946		ug/L		95	80 - 120	1	20

Lab Sample ID: 580-106358-1 MS
Matrix: Water
Analysis Batch: 369728

Client Sample ID: MW-4_20210928
Prep Type: Total Recoverable
Prep Batch: 369605

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead	ND		1000	1020		ug/L		101	80 - 120		

Lab Sample ID: 580-106358-1 MSD
Matrix: Water
Analysis Batch: 369728

Client Sample ID: MW-4_20210928
Prep Type: Total Recoverable
Prep Batch: 369605

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	ND		1000	1020		ug/L		102	80 - 120	0	20

Lab Sample ID: 580-106358-1 DU
Matrix: Water
Analysis Batch: 369728

Client Sample ID: MW-4_20210928
Prep Type: Total Recoverable
Prep Batch: 369605

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Lead	ND			ND		ug/L				NC	20

Lab Sample ID: MB 580-369820/18-B
Matrix: Water
Analysis Batch: 370149

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 369986

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.40		ug/L		10/07/21 17:13	10/08/21 12:21	1

Lab Sample ID: LCS 580-369820/19-B
Matrix: Water
Analysis Batch: 370149

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 369986

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead			1000	957		ug/L		96	80 - 120		

Lab Sample ID: LCSD 580-369820/20-B
Matrix: Water
Analysis Batch: 370149

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 369986

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead			1000	960		ug/L		96	80 - 120	0	20

QC Association Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

GC/MS VOA

Analysis Batch: 370272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1	MW-4_20210928	Total/NA	Water	8260D	
580-106358-2	MW-12_20210928	Total/NA	Water	8260D	
580-106358-3	MW-13_20210928	Total/NA	Water	8260D	
580-106358-4	MW-20_20210928	Total/NA	Water	8260D	
580-106358-5	MW-21_20210928	Total/NA	Water	8260D	
MB 580-370272/7	Method Blank	Total/NA	Water	8260D	
LCS 580-370272/4	Lab Control Sample	Total/NA	Water	8260D	
LCSD 580-370272/5	Lab Control Sample Dup	Total/NA	Water	8260D	

GC VOA

Analysis Batch: 369517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1	MW-4_20210928	Total/NA	Water	NWTPH-Gx	
580-106358-2	MW-12_20210928	Total/NA	Water	NWTPH-Gx	
580-106358-3	MW-13_20210928	Total/NA	Water	NWTPH-Gx	
580-106358-4	MW-20_20210928	Total/NA	Water	NWTPH-Gx	
580-106358-5	MW-21_20210928	Total/NA	Water	NWTPH-Gx	
MB 580-369517/3	Method Blank	Total/NA	Water	NWTPH-Gx	
LCS 580-369517/4	Lab Control Sample	Total/NA	Water	NWTPH-Gx	
LCSD 580-369517/5	Lab Control Sample Dup	Total/NA	Water	NWTPH-Gx	

GC Semi VOA

Prep Batch: 369572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1	MW-4_20210928	Total/NA	Water	3510C	
580-106358-2	MW-12_20210928	Total/NA	Water	3510C	
580-106358-4	MW-20_20210928	Total/NA	Water	3510C	
580-106358-5	MW-21_20210928	Total/NA	Water	3510C	
MB 580-369572/1-A	Method Blank	Total/NA	Water	3510C	
LCS 580-369572/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 580-369572/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 369738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1	MW-4_20210928	Total/NA	Water	NWTPH-Dx	369572
580-106358-2	MW-12_20210928	Total/NA	Water	NWTPH-Dx	369572
580-106358-4	MW-20_20210928	Total/NA	Water	NWTPH-Dx	369572
580-106358-5	MW-21_20210928	Total/NA	Water	NWTPH-Dx	369572
MB 580-369572/1-A	Method Blank	Total/NA	Water	NWTPH-Dx	369572
LCS 580-369572/2-A	Lab Control Sample	Total/NA	Water	NWTPH-Dx	369572
LCSD 580-369572/3-A	Lab Control Sample Dup	Total/NA	Water	NWTPH-Dx	369572

Prep Batch: 369768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-3	MW-13_20210928	Total/NA	Water	3510C	
MB 580-369768/1-A	Method Blank	Total/NA	Water	3510C	
LCS 580-369768/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 580-369768/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

GC Semi VOA

Analysis Batch: 369969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-3	MW-13_20210928	Total/NA	Water	NWTPH-Dx	369768
MB 580-369768/1-A	Method Blank	Total/NA	Water	NWTPH-Dx	369768
LCS 580-369768/2-A	Lab Control Sample	Total/NA	Water	NWTPH-Dx	369768
LCSD 580-369768/3-A	Lab Control Sample Dup	Total/NA	Water	NWTPH-Dx	369768

Prep Batch: 370640

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1 - RE	MW-4_20210928	Total/NA	Water	3510C	
580-106358-2 - RE	MW-12_20210928	Total/NA	Water	3510C	
580-106358-4 - RE	MW-20_20210928	Total/NA	Water	3510C	
580-106358-5 - RE	MW-21_20210928	Total/NA	Water	3510C	
MB 580-370640/1-A	Method Blank	Total/NA	Water	3510C	
LCS 580-370640/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 580-370640/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 370811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1 - RE	MW-4_20210928	Total/NA	Water	NWTPH-Dx	370640
580-106358-2 - RE	MW-12_20210928	Total/NA	Water	NWTPH-Dx	370640
580-106358-4 - RE	MW-20_20210928	Total/NA	Water	NWTPH-Dx	370640
580-106358-5 - RE	MW-21_20210928	Total/NA	Water	NWTPH-Dx	370640
MB 580-370640/1-A	Method Blank	Total/NA	Water	NWTPH-Dx	370640
LCS 580-370640/2-A	Lab Control Sample	Total/NA	Water	NWTPH-Dx	370640
LCSD 580-370640/3-A	Lab Control Sample Dup	Total/NA	Water	NWTPH-Dx	370640

Metals

Prep Batch: 369605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1	MW-4_20210928	Total Recoverable	Water	3005A	
580-106358-2	MW-12_20210928	Total Recoverable	Water	3005A	
580-106358-3	MW-13_20210928	Total Recoverable	Water	3005A	
580-106358-4	MW-20_20210928	Total Recoverable	Water	3005A	
580-106358-5	MW-21_20210928	Total Recoverable	Water	3005A	
MB 580-369605/24-A	Method Blank	Total Recoverable	Water	3005A	
LCS 580-369605/25-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCSD 580-369605/26-A	Lab Control Sample Dup	Total Recoverable	Water	3005A	
580-106358-1 MS	MW-4_20210928	Total Recoverable	Water	3005A	
580-106358-1 MSD	MW-4_20210928	Total Recoverable	Water	3005A	
580-106358-1 DU	MW-4_20210928	Total Recoverable	Water	3005A	

Analysis Batch: 369728

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1	MW-4_20210928	Total Recoverable	Water	6020B	369605
580-106358-2	MW-12_20210928	Total Recoverable	Water	6020B	369605
580-106358-3	MW-13_20210928	Total Recoverable	Water	6020B	369605
580-106358-4	MW-20_20210928	Total Recoverable	Water	6020B	369605
580-106358-5	MW-21_20210928	Total Recoverable	Water	6020B	369605
MB 580-369605/24-A	Method Blank	Total Recoverable	Water	6020B	369605
LCS 580-369605/25-A	Lab Control Sample	Total Recoverable	Water	6020B	369605
LCSD 580-369605/26-A	Lab Control Sample Dup	Total Recoverable	Water	6020B	369605

Metals (Continued)

Analysis Batch: 369728 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1 MS	MW-4_20210928	Total Recoverable	Water	6020B	369605
580-106358-1 MSD	MW-4_20210928	Total Recoverable	Water	6020B	369605
580-106358-1 DU	MW-4_20210928	Total Recoverable	Water	6020B	369605

Filtration Batch: 369820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1	MW-4_20210928	Dissolved	Water	FILTRATION	
580-106358-2	MW-12_20210928	Dissolved	Water	FILTRATION	
580-106358-3	MW-13_20210928	Dissolved	Water	FILTRATION	
580-106358-4	MW-20_20210928	Dissolved	Water	FILTRATION	
580-106358-5	MW-21_20210928	Dissolved	Water	FILTRATION	
MB 580-369820/18-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 580-369820/19-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCSD 580-369820/20-B	Lab Control Sample Dup	Dissolved	Water	FILTRATION	

Prep Batch: 369986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1	MW-4_20210928	Dissolved	Water	3005A	369820
580-106358-2	MW-12_20210928	Dissolved	Water	3005A	369820
580-106358-3	MW-13_20210928	Dissolved	Water	3005A	369820
580-106358-4	MW-20_20210928	Dissolved	Water	3005A	369820
580-106358-5	MW-21_20210928	Dissolved	Water	3005A	369820
MB 580-369820/18-B	Method Blank	Dissolved	Water	3005A	369820
LCS 580-369820/19-B	Lab Control Sample	Dissolved	Water	3005A	369820
LCSD 580-369820/20-B	Lab Control Sample Dup	Dissolved	Water	3005A	369820

Analysis Batch: 370149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-106358-1	MW-4_20210928	Dissolved	Water	6020B	369986
580-106358-2	MW-12_20210928	Dissolved	Water	6020B	369986
580-106358-3	MW-13_20210928	Dissolved	Water	6020B	369986
580-106358-4	MW-20_20210928	Dissolved	Water	6020B	369986
580-106358-5	MW-21_20210928	Dissolved	Water	6020B	369986
MB 580-369820/18-B	Method Blank	Dissolved	Water	6020B	369986
LCS 580-369820/19-B	Lab Control Sample	Dissolved	Water	6020B	369986
LCSD 580-369820/20-B	Lab Control Sample Dup	Dissolved	Water	6020B	369986

Lab Chronicle

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

Client Sample ID: MW-4_20210928
Date Collected: 09/28/21 12:30
Date Received: 10/01/21 14:30

Lab Sample ID: 580-106358-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	370272	10/12/21 18:30	CJ	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	369517	10/04/21 16:57	CJ	FGS SEA
Total/NA	Prep	3510C			369572	10/04/21 14:50	JHR	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	369738	10/06/21 20:19	ADB	FGS SEA
Total/NA	Prep	3510C	RE		370640	10/15/21 10:21	BJM	FGS SEA
Total/NA	Analysis	NWTPH-Dx	RE	1	370811	10/17/21 02:17	JAE	FGS SEA
Dissolved	Filtration	FILTRATION			369820	10/06/21 15:25	TMH	FGS SEA
Dissolved	Prep	3005A			369986	10/07/21 17:13	TMH	FGS SEA
Dissolved	Analysis	6020B		5	370149	10/08/21 13:57	FCW	FGS SEA
Total Recoverable	Prep	3005A			369605	10/04/21 17:54	TMH	FGS SEA
Total Recoverable	Analysis	6020B		5	369728	10/05/21 11:48	FCW	FGS SEA

Client Sample ID: MW-12_20210928
Date Collected: 09/28/21 16:00
Date Received: 10/01/21 14:30

Lab Sample ID: 580-106358-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	370272	10/12/21 18:55	CJ	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	369517	10/04/21 17:21	CJ	FGS SEA
Total/NA	Prep	3510C			369572	10/04/21 14:50	JHR	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	369738	10/06/21 20:39	ADB	FGS SEA
Total/NA	Prep	3510C	RE		370640	10/15/21 10:21	BJM	FGS SEA
Total/NA	Analysis	NWTPH-Dx	RE	1	370811	10/17/21 02:36	JAE	FGS SEA
Dissolved	Filtration	FILTRATION			369820	10/06/21 15:25	TMH	FGS SEA
Dissolved	Prep	3005A			369986	10/07/21 17:13	TMH	FGS SEA
Dissolved	Analysis	6020B		5	370149	10/08/21 14:01	FCW	FGS SEA
Total Recoverable	Prep	3005A			369605	10/04/21 17:54	TMH	FGS SEA
Total Recoverable	Analysis	6020B		5	369728	10/05/21 11:44	FCW	FGS SEA

Client Sample ID: MW-13_20210928
Date Collected: 09/28/21 14:55
Date Received: 10/01/21 14:30

Lab Sample ID: 580-106358-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	370272	10/12/21 19:20	CJ	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	369517	10/04/21 17:46	CJ	FGS SEA
Total/NA	Prep	3510C			369768	10/06/21 11:33	JHR	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	369969	10/08/21 05:22	JAE	FGS SEA
Dissolved	Filtration	FILTRATION			369820	10/06/21 15:25	TMH	FGS SEA
Dissolved	Prep	3005A			369986	10/07/21 17:13	TMH	FGS SEA
Dissolved	Analysis	6020B		5	370149	10/08/21 14:05	FCW	FGS SEA
Total Recoverable	Prep	3005A			369605	10/04/21 17:54	TMH	FGS SEA
Total Recoverable	Analysis	6020B		5	369728	10/05/21 12:51	FCW	FGS SEA

Lab Chronicle

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

Client Sample ID: MW-20_20210928

Lab Sample ID: 580-106358-4

Date Collected: 09/28/21 11:15

Matrix: Water

Date Received: 10/01/21 14:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	370272	10/12/21 19:45	CJ	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	369517	10/04/21 18:11	CJ	FGS SEA
Total/NA	Prep	3510C			369572	10/04/21 14:50	JHR	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	369738	10/06/21 21:37	ADB	FGS SEA
Total/NA	Prep	3510C	RE		370640	10/15/21 10:21	BJM	FGS SEA
Total/NA	Analysis	NWTPH-Dx	RE	1	370811	10/17/21 02:56	JAE	FGS SEA
Dissolved	Filtration	FILTRATION			369820	10/06/21 15:25	TMH	FGS SEA
Dissolved	Prep	3005A			369986	10/07/21 17:13	TMH	FGS SEA
Dissolved	Analysis	6020B		5	370149	10/08/21 14:09	FCW	FGS SEA
Total Recoverable	Prep	3005A			369605	10/04/21 17:54	TMH	FGS SEA
Total Recoverable	Analysis	6020B		5	369728	10/05/21 12:55	FCW	FGS SEA

Client Sample ID: MW-21_20210928

Lab Sample ID: 580-106358-5

Date Collected: 09/28/21 10:30

Matrix: Water

Date Received: 10/01/21 14:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	370272	10/12/21 20:10	CJ	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	369517	10/04/21 18:35	CJ	FGS SEA
Total/NA	Prep	3510C			369572	10/04/21 14:50	JHR	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	369738	10/06/21 21:57	ADB	FGS SEA
Total/NA	Prep	3510C	RE		370640	10/15/21 10:21	BJM	FGS SEA
Total/NA	Analysis	NWTPH-Dx	RE	1	370811	10/17/21 03:35	JAE	FGS SEA
Dissolved	Filtration	FILTRATION			369820	10/06/21 15:25	TMH	FGS SEA
Dissolved	Prep	3005A			369986	10/07/21 17:13	TMH	FGS SEA
Dissolved	Analysis	6020B		5	370149	10/08/21 14:12	FCW	FGS SEA
Total Recoverable	Prep	3005A			369605	10/04/21 17:54	TMH	FGS SEA
Total Recoverable	Analysis	6020B		5	369728	10/05/21 12:58	FCW	FGS SEA

Laboratory References:

FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

Laboratory: Eurofins FGS, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Washington	State	C788	07-13-22

Method Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	FGS SEA
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC)	NWTPH	FGS SEA
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	FGS SEA
6020B	Metals (ICP/MS)	SW846	FGS SEA
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	FGS SEA
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	FGS SEA
5030B	Purge and Trap	SW846	FGS SEA
FILTRATION	Sample Filtration	None	FGS SEA

Protocol References:

None = None

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Sample Summary

Client: Antea USA Inc.
Project/Site: BP -ARCO 980

Job ID: 580-106358-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-106358-1	MW-4_20210928	Water	09/28/21 12:30	10/01/21 14:30
580-106358-2	MW-12_20210928	Water	09/28/21 16:00	10/01/21 14:30
580-106358-3	MW-13_20210928	Water	09/28/21 14:55	10/01/21 14:30
580-106358-4	MW-20_20210928	Water	09/28/21 11:15	10/01/21 14:30
580-106358-5	MW-21_20210928	Water	09/28/21 10:30	10/01/21 14:30

Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: ARCO 980 | Req Due Date (mm/dd/yy): Standard TAT | Rush TAT Yes ____ No X

BP/RM Facility No: ARCO Facility No. 00980 | Lab Work Order Number: 106358

Lab Name: Test America	BP/ARC Facility Address: 10822 Roosevelt Way NE	Consultant/Contractor: Antea Group	
Lab Address: 5755 8th Street East, Tacoma, WA 98424	City, State, ZIP Code: Seattle, WA	Consultant/Contractor Project No: 00980SA211.20100	
Lab PM: 00980SA201.20100.MR	Lead Regulatory Agency: Washington State Department of Ecology	Address: 2006 148th Ave NE, Redmond, WA 98052	
Lab Phone: 253.248.4972	California Global ID No.: NA	Consultant/Contractor PM: Megan Richard	
Lab Shipping Accnt: NA	Enfos Proposal No: 009VH-0016 WR850198	Phone: 425 498 7711 Email: Megan.Richard@anteagroup.us	
Lab Bottle Order No: NA	Accounting Mode: Provision ___X___ OOC-BU _____ OOC-RM _____	Send/Submit EDD to: Megan.Richard@anteagroup.us	
Other Info: elaine.walker@Eurofinset.com	Stage 2_Select (20) Activity Additional Data Collection (100)	Invoice To: BP-RM _____ BP/ARC ___X___	
BP/RM PM: Wade Melton			
PM Phone: 360-594-7978			
PM Email: wade.melton@bp.com			

Report Type & QC Level: Limited (Standard) Package ___ ; Limited Plus Package ; Full Package

580-106358 Chain of Custody

Lab No.	Sample Description	Date	Time	Field Matrix	Start Depth	End Depth	Depth Unit	Grab (G) or Composite (C)	Total Number of Containers	Filt	Pres	Analysis: BTEX by EPA 8260	MTBE by EPA 8260	NWTPH-Gx	NWTPH-Dx	Pb-T by EPA 6020	Pb-D by EPA 6020
-1	MW-4	9/24/21	1230	W				G	10			X	X	X	X	X	X
	~~MW-11~~	~~9/24/21~~		W				G				X	X	X	X	X	X
-2	MW-12		1600	W				G	10			X	X	X	X	X	X
-3	MW-13		1455	W				G	10			X	X	X	X	X	X
	~~MW-15~~			W				G				X	X	X	X	X	X
-4	MW-20		1115	W				G	10			X	X	X	X	X	X
-5	MW-21		1030	W				G	10			X	X	X	X	X	X

SH

SH

Sampler's Name: Samantha Hinze, Kate Spencer

Sampler's Company: Antea Group

Ship Method: Courier Ship Date: ~~10/1/21~~ 10/1/21

Shipment Tracking No:

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Samantha Hinze/AG	10/1/21	1230		10/1/21	12.30
				@lab	1435

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ | Therm. ID: A2 Cor: 0.1 ° Unc: 0.4 ° | Submitted: Yes / No

Cooler Dsc: Lyr

Packing: Bub

Cust. Seal: Yes ✓ No ____

Blue Ice, Wet, Dry, None

FedEx: _____

UPS: _____

Lab Cour: SO

Other: _____

LaMP Soil/H2O COC July 2018

bp rm

Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: ARCO 980 | Req Due Date (mm/dd/yy): Standard TAT | Rush TAT Yes ___ No X

BP/RM Facility No: ARCO Facility No. 00980 | Lab Work Order Number: 106358

Lab Name:	Test America	BP/ARC Facility Address:	10822 Roosevelt Way NE	Consultant/Contractor:	Antea Group
Lab Address:	5755 8th Street East, Tacoma, WA 98424	City, State, ZIP Code:	Seattle, WA	Consultant/Contractor Project No:	00980SA211.20100
Lab PM:	00980SA211.20100.MR	Lead Regulatory Agency:	Washington State Department of Ecology	Address:	2006 148th Ave NE, Redmond, WA 98052
Lab Phone:	253.248.4972	California Global ID No.:	NA	Consultant/Contractor PM:	Megan Richard
Lab Shipping Accnt:	NA	Enfos Proposal No:	009VH-0016 WR850198	Phone: 425 498 7711	Email: Megan.Richard@anteagroup.us
Lab Bottle Order No:	NA	Accounting Mode:	Provision X OOC-BU ___ OOC-RM ___	Send/Submit EDD to:	Megan.Richard@anteagroup.us
Other Info:	elaine.walker@Eurofinset.com	Stage 2_Select (20)	Activity Additional Data Collection (100)	Invoice To:	BP-RM ___ BP/ARC X
BP/RM PM:	Wade Melton				
PM Phone:	360-594-7978				
PM Email:	wade.melton@bp.com				

Report Type & QC Level: Limited (Standard) Package —; Limited Plus Package; Full Package

Lab No.	Sample Description	Date	Time	Field Matrix	Start Depth	End Depth	Depth Unit	Grab (G) or Composite (C)	Total Number of Containers	Analysis	BTEX by EPA 8260	MTBE by EPA 8260	NWTPH-Gx	NWTPH-Dx	Pb-T by EPA 6020	Pb-D by EPA 6020	Comments
	~~B1 (JPHC)~~			~~W~~				~~G~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	SH
-6	Trip-Blank			W				G	4		X		X				
~~-7~~	~~MW-7_20210928~~																SH Dispose. Accidently sampled

Sampler's Name: Sam Hinze, Kate Younger

Sampler's Company: Antea Group

Ship Method: Courier | Ship Date: 10/1/21

Shipment Tracking No:

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Samantha Hinze/AG	10/1/21	1230	[signature]	10/1/21	12:30

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: ______ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

BP LaMP Soil/H2O COC July 2018

Proprietary and Confidential
Property of BP and its Affiliates

10/21/2021

Login Sample Receipt Checklist

Client: Antea USA Inc.

Job Number: 580-106358-1

Login Number: 106358
List Number: 1
Creator: Blankinship, Tom X

List Source: Eurofins FGS, 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.	False	Refer to Job Narrative for details.
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	

GC/MS VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 370272 Batch Start Date: 10/12/21 09:45 Batch Analyst: Jantanu, Charinporn

Batch Method: 8260D Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	Initial pH	5X SUR/IS 00003	VOAMasterMix 00070	VOASTDGASweek 00078
LCS 580-370272/4		8260D		5 mL	5 mL		1 uL	10 uL	10 uL
LCSD 580-370272/5		8260D		5 mL	5 mL		1 uL	10 uL	10 uL
MB 580-370272/7		8260D		5 mL	5 mL		1 uL		
580-106358-A-1	MW-4_20210928	8260D	T	5 mL	5 mL	<2 SU	1 uL		
580-106358-A-2	MW-12_20210928	8260D	T	5 mL	5 mL	<2 SU	1 uL		
580-106358-A-3	MW-13_20210928	8260D	T	5 mL	5 mL	<2 SU	1 uL		
580-106358-A-4	MW-20_20210928	8260D	T	5 mL	5 mL	<2 SU	1 uL		
580-106358-A-5	MW-21_20210928	8260D	T	5 mL	5 mL	<2 SU	1 uL		

Batch Notes	

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 369517 Batch Start Date: 10/04/21 10:50 Batch Analyst: Jantanu, Charinporn

Batch Method: NWTPH-Gx Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	Initial pH	BFBGRO ARCHON 00046	GRO_LCS 00069	
MB 580-369517/3		NWTPH-Gx		5 mL	5 mL		1 uL		
LCS 580-369517/4		NWTPH-Gx		5 mL	5 mL		1 uL	25 uL	
LCSD 580-369517/5		NWTPH-Gx		5 mL	5 mL		1 uL	25 uL	
580-106358-A-1	MW-4_20210928	NWTPH-Gx	T	5 mL	5 mL	<2 SU	1 uL		
580-106358-A-2	MW-12_20210928	NWTPH-Gx	T	5 mL	5 mL	<2 SU	1 uL		
580-106358-A-3	MW-13_20210928	NWTPH-Gx	T	5 mL	5 mL	<2 SU	1 uL		
580-106358-A-4	MW-20_20210928	NWTPH-Gx	T	5 mL	5 mL	<2 SU	1 uL		
580-106358-A-5	MW-21_20210928	NWTPH-Gx	T	5 mL	5 mL	<2 SU	1 uL		

Batch Notes	

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 369572 Batch Start Date: 10/04/21 14:50 Batch Analyst: Roberts, Jacob H

Batch Method: 3510C Batch End Date: 10/04/21 21:10

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	FirstAdjustpH
MB 580-369572/1		3510C, NWTPH-Dx				250 mL	1 mL	7 SU	2 SU
LCS 580-369572/2		3510C, NWTPH-Dx				250 mL	1 mL	7 SU	2 SU
LCSD 580-369572/3		3510C, NWTPH-Dx				250 mL	1 mL	7 SU	2 SU
580-106358-G-1	MW-4_20210928	3510C, NWTPH-Dx	T	00436.02 g	00174.09 g	261.9 mL	1 mL	2 SU	2 SU
580-106358-H-2	MW-12_20210928	3510C, NWTPH-Dx	T	00431.22 g	00175.12 g	256.1 mL	1 mL	2 SU	2 SU
580-106358-G-4	MW-20_20210928	3510C, NWTPH-Dx	T	00435.13 g	00175.74 g	259.4 mL	1 mL	2 SU	2 SU
580-106358-G-5	MW-21_20210928	3510C, NWTPH-Dx	T	00432.08 g	00175.78 g	256.3 mL	1 mL	2 SU	2 SU

Lab Sample ID	Client Sample ID	Method Chain	Basis	SecondAdjustpH	TPH_Water_Spk 00029	TPH_WaterSurr 00071			
MB 580-369572/1		3510C, NWTPH-Dx		n/a SU		100 uL			
LCS 580-369572/2		3510C, NWTPH-Dx		n/a SU	100 uL	100 uL			
LCSD 580-369572/3		3510C, NWTPH-Dx		n/a SU	100 uL	100 uL			
580-106358-G-1	MW-4_20210928	3510C, NWTPH-Dx	T	n/a SU		100 uL			
580-106358-H-2	MW-12_20210928	3510C, NWTPH-Dx	T	n/a SU		100 uL			
580-106358-G-4	MW-20_20210928	3510C, NWTPH-Dx	T	n/a SU		100 uL			
580-106358-G-5	MW-21_20210928	3510C, NWTPH-Dx	T	n/a SU		100 uL			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 369572 Batch Start Date: 10/04/21 14:50 Batch Analyst: Roberts, Jacob H

Batch Method: 3510C Batch End Date: 10/04/21 21:10

Batch Notes	
Acid Used for pH Adjustment ID	2815022
Balance ID	Sea 225
Batch Comment	Vialed by: JHR
Analyst ID - Concentration	JHR
Concentration 1 Corrected Temperature	70.3-75.3 Degrees C
Concentration 2 Corrected Temperature	19.1 Degrees C
Equipment ID - Concentration 1	Steambath 1
Equipment ID - Concentration 2	Turbovap 6
Analyst ID - Extraction	JHR/BM
Filter ID	2815023
Method/Fraction	3510C_LVI / NWTPH
Na2SO4 ID	288067
pH Indicator ID	6911002/6007004
Pipette/Syringe/Dispenser ID	MP4
Prep Solvent ID	2959739
Prep Solvent Volume Used	100 mL
Analyst ID - Spike Analyst	JHR
Analyst ID - Spike Witness Analyst	BM
Sufficient Volume for Batch QC	no
Thermometer ID - Concentration 1	61013-040-1
Thermometer ID - Concentration 2	DIGITALREADOUT
Concentration 1 Uncorrected Temperature	70.0-75.0 Degrees C
Concentration 2 Uncorrected Temperature	23.0 Degrees C
Vial Lot Number	24162054
Reagent Water ID	DI

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 369768 Batch Start Date: 10/06/21 11:33 Batch Analyst: Roberts, Jacob H

Batch Method: 3510C Batch End Date: 10/06/21 19:56

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	FirstAdjustpH
MB 580-369768/1		3510C, NWTPH-Dx				250 mL	1 mL	7 SU	2 SU
LCS 580-369768/2		3510C, NWTPH-Dx				250 mL	1 mL	7 SU	2 SU
LCSD 580-369768/3		3510C, NWTPH-Dx				250 mL	1 mL	7 SU	2 SU
580-106358-G-3	MW-13_20210928	3510C, NWTPH-Dx	T	00434.07 g	00175.52 g	258.6 mL	1 mL	2 SU	2 SU

Lab Sample ID	Client Sample ID	Method Chain	Basis	SecondAdjustpH	TPH_Water_Spk 00029	TPH_WaterSurr 00071			
MB 580-369768/1		3510C, NWTPH-Dx		n/a SU		100 uL			
LCS 580-369768/2		3510C, NWTPH-Dx		n/a SU	100 uL	100 uL			
LCSD 580-369768/3		3510C, NWTPH-Dx		n/a SU	100 uL	100 uL			
580-106358-G-3	MW-13_20210928	3510C, NWTPH-Dx	T	n/a SU		100 uL			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 369768 Batch Start Date: 10/06/21 11:33 Batch Analyst: Roberts, Jacob H

Batch Method: 3510C Batch End Date: 10/06/21 19:56

Batch Notes	
Acid Used for pH Adjustment ID	2815022
Balance ID	Sea 225
Batch Comment	Vialed by: JHR
Analyst ID - Concentration	JHR
Concentration 1 Corrected Temperature	70.3-75.3 Degrees C
Concentration 2 Corrected Temperature	18.2 Degrees C
Equipment ID - Concentration 1	Steambath 1
Equipment ID - Concentration 2	Turbovap 6
Analyst ID - Extraction	JHR
Filter ID	2815023
Method/Fraction	3510C_LVI / NWTPH
Na2SO4 ID	288067
pH Indicator ID	6911002/6007004
Pipette/Syringe/Dispenser ID	MP4
Prep Solvent ID	2959739
Prep Solvent Volume Used	100 mL
Analyst ID - Spike Analyst	JHR
Analyst ID - Spike Witness Analyst	CC
Sufficient Volume for Batch QC	no
Thermometer ID - Concentration 1	61013-040-1
Thermometer ID - Concentration 2	DIGITALREADOUT
Concentration 1 Uncorrected Temperature	70.0-75.0 Degrees C
Concentration 2 Uncorrected Temperature	20.0 Degrees C
Vial Lot Number	24162054
Reagent Water ID	DI

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 370640 Batch Start Date: 10/15/21 10:21 Batch Analyst: Maertens, Blair J

Batch Method: 3510C Batch End Date: 10/15/21 13:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	FirstAdjustpH
MB 580-370640/1		3510C, NWTPH-Dx				250 mL	1 mL	7 SU	2 SU
LCS 580-370640/2		3510C, NWTPH-Dx				250 mL	1 mL	7 SU	2 SU
LCSD 580-370640/3		3510C, NWTPH-Dx				250 mL	1 mL	7 SU	2 SU
580-106358-H-1	MW-4_20210928	3510C, NWTPH-Dx	T	00437.21 g	00175.65 g	261.6 mL	1 mL	2 SU	2 SU
580-106358-G-2	MW-12_20210928	3510C, NWTPH-Dx	T	00434.26 g	00174.37 g	259.9 mL	1 mL	2 SU	2 SU
580-106358-H-4	MW-20_20210928	3510C, NWTPH-Dx	T	00435.58 g	00174.39 g	261.2 mL	1 mL	2 SU	2 SU
580-106358-H-5	MW-21_20210928	3510C, NWTPH-Dx	T	00437.85 g	00174.48 g	263.4 mL	1 mL	2 SU	2 SU

Lab Sample ID	Client Sample ID	Method Chain	Basis	SecondAdjustpH	TPH_Water_Spk 00029	TPH_WaterSurr 00072			
MB 580-370640/1		3510C, NWTPH-Dx		n/a SU		100 uL			
LCS 580-370640/2		3510C, NWTPH-Dx		n/a SU	100 uL	100 uL			
LCSD 580-370640/3		3510C, NWTPH-Dx		n/a SU	100 uL	100 uL			
580-106358-H-1	MW-4_20210928	3510C, NWTPH-Dx	T	n/a SU		100 uL			
580-106358-G-2	MW-12_20210928	3510C, NWTPH-Dx	T	n/a SU		100 uL			
580-106358-H-4	MW-20_20210928	3510C, NWTPH-Dx	T	n/a SU		100 uL			
580-106358-H-5	MW-21_20210928	3510C, NWTPH-Dx	T	n/a SU		100 uL			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 370640 Batch Start Date: 10/15/21 10:21 Batch Analyst: Maertens, Blair J

Batch Method: 3510C Batch End Date: 10/15/21 13:38

Batch Notes	
Acid Used for pH Adjustment ID	2815022
Balance ID	SEA225
Batch Comment	Vialed by: PS
Analyst ID - Concentration	PS/JHR
Concentration 1 Corrected Temperature	70.3-75.3 Degrees C
Concentration 2 Corrected Temperature	18.2 Degrees C
Equipment ID - Concentration 1	Steambath 1
Equipment ID - Concentration 2	TurboVap 5
Analyst ID - Extraction	PS/BM/JHR
Filter ID	2815023
Method/Fraction	3510C_LVI I/ NWTPH
Na2SO4 ID	288067
pH Indicator ID	6003004/6003005
Pipette/Syringe/Dispenser ID	MP4
Prep Solvent ID	2978846
Prep Solvent Volume Used	100 mL
Silica Gel ID	2885687
Analyst ID - Spike Analyst	PS
Analyst ID - Spike Witness Analyst	BM
Sufficient Volume for Batch QC	No
Thermometer ID - Concentration 1	61013-040-1
Thermometer ID - Concentration 2	DIGITALREADOUT
Concentration 1 Uncorrected Temperature	70.0-75.0 Degrees C
Concentration 2 Uncorrected Temperature	20.0 Degrees C
Vial Lot Number	24162054
Reagent Water ID	DI

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 369605 Batch Start Date: 10/04/21 17:54 Batch Analyst: Hua, Tammy M

Batch Method: 3005A Batch End Date: 10/04/21 22:20

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ICP CAL 1 00012	ICP CAL 2 00011	MET Spike 3C 00032	
580-106358-J-1	MW-4_20210928	3005A, 6020B	R	50 mL	50 mL				
580-106358-J-1 DU	MW-4_20210928	3005A, 6020B	R	50 mL	50 mL				
580-106358-J-1 MS	MW-4_20210928	3005A, 6020B	R	50 mL	50 mL	0.5 mL	0.5 mL	0.5 mL	
580-106358-J-1 MSD	MW-4_20210928	3005A, 6020B	R	50 mL	50 mL	0.5 mL	0.5 mL	0.5 mL	
580-106358-J-2	MW-12_20210928	3005A, 6020B	R	50 mL	50 mL				
580-106358-J-3	MW-13_20210928	3005A, 6020B	R	50 mL	50 mL				
580-106358-J-4	MW-20_20210928	3005A, 6020B	R	50 mL	50 mL				
580-106358-J-5	MW-21_20210928	3005A, 6020B	R	50 mL	50 mL				
MB 580-369605/24		3005A, 6020B		50 mL	50 mL				
LCS 580-369605/25		3005A, 6020B		50 mL	50 mL	0.5 mL	0.5 mL	0.5 mL	
LCSD 580-369605/26		3005A, 6020B		50 mL	50 mL	0.5 mL	0.5 mL	0.5 mL	

Batch Notes	
Temperature - Corrected - End	91.7 Degrees C
Temperature - Corrected - Start	91.7 Degrees C
Digestion End Time	10/04/2021 22:20
Digestion Start Time	10/04/2021 18:20
Digestion Unit ID	BLOCK b
Hydrochloric Acid ID	2954796
Nitric Acid ID	2954806
Pipette/Syringe/Dispenser ID	metals prep 2
Analyst ID - Spike Analyst	TH
Thermometer Location ID	b42
Thermometer ID	698320
Digestion Tube/Cup ID	2953186
Temperature - Uncorrected - End	91.0 Degrees C
Temperature - Uncorrected - Start	91.0 Degrees C

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 369605 Batch Start Date: 10/04/21 17:54 Batch Analyst: Hua, Tammy M

Batch Method: 3005A Batch End Date: 10/04/21 22:20

Basis	Basis Description
R	Total Recoverable

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 369820 Batch Start Date: 10/06/21 15:24 Batch Analyst: Hua, Tammy M

Batch Method: FILTRATION Batch End Date: 10/06/21 16:57

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount				
580-106358-I-5	MW-21_20210928	FILTRATION, 3005A, 6020B	D	250 mL	250 mL				
580-106358-I-4	MW-20_20210928	FILTRATION, 3005A, 6020B	D	250 mL	250 mL				
580-106358-I-3	MW-13_20210928	FILTRATION, 3005A, 6020B	D	250 mL	250 mL				
580-106358-I-2	MW-12_20210928	FILTRATION, 3005A, 6020B	D	250 mL	250 mL				
580-106358-I-1	MW-4_20210928	FILTRATION, 3005A, 6020B	D	250 mL	250 mL				
MB 580-369820/18		FILTRATION, 3005A, 6020B		250 mL	250 mL				
LCS 580-369820/19		FILTRATION, 3005A, 6020B		250 mL	250 mL				
LCSD 580-369820/20		FILTRATION, 3005A, 6020B		250 mL	250 mL				

Batch Notes	
Filter ID	1315956
Nitric Acid ID	2954806

Basis	Basis Description
D	Dissolved

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 369986 Batch Start Date: 10/07/21 17:13 Batch Analyst: Hua, Tammy M

Batch Method: 3005A Batch End Date: 10/08/21 09:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ICP CAL 1 00012	ICP CAL 2 00011	MET Spike 3C 00032	
580-106358-I-1-A	MW-4_20210928	3005A, 6020B	D	50 mL	50 mL				
580-106358-I-2-A	MW-12_20210928	3005A, 6020B	D	50 mL	50 mL				
580-106358-I-3-A	MW-13_20210928	3005A, 6020B	D	50 mL	50 mL				
580-106358-I-4-A	MW-20_20210928	3005A, 6020B	D	50 mL	50 mL				
580-106358-I-5-A	MW-21_20210928	3005A, 6020B	D	50 mL	50 mL				
MB 580-369820/18-A		3005A, 6020B		50 mL	50 mL				
LCS 580-369820/19-A		3005A, 6020B		50 mL	50 mL	0.5 mL	0.5 mL	0.5 mL	
LCSD 580-369820/20-A		3005A, 6020B		50 mL	50 mL	0.5 mL	0.5 mL	0.5 mL	

Batch Notes	
Temperature - Corrected - End	90.1 Degrees C
Temperature - Corrected - Start	90.1 Degrees C
Digestion End Time	10/07/2021 21:55
Digestion Start Time	10/07/2021 17:55
Digestion Unit ID	BLOCK E
Hydrochloric Acid ID	2954795
Nitric Acid ID	2954808
Pipette/Syringe/Dispenser ID	metals prep 2
Analyst ID - Spike Analyst	TH
Thermometer Location ID	E45
Thermometer ID	700396
Digestion Tube/Cup ID	2953186
Temperature - Uncorrected - End	90.0 Degrees C
Temperature - Uncorrected - Start	90.0 Degrees C

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins FGS, Seattle Job No.: 580-106358-1

SDG No.:

Batch Number: 369986 Batch Start Date: 10/07/21 17:13 Batch Analyst: Hua, Tammy M

Batch Method: 3005A Batch End Date: 10/08/21 09:00

Basis	Basis Description
D	Dissolved

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.