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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Method
AST	Aboveground Storage Tank
bgs	Below ground surface
CFR	Code of Federal Regulations
Discovery	Discovery Drilling, Inc. of Anchorage, Alaska
DQO	Data Quality Objective
DRO	Diesel Range Organics
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
GRO	Gasoline Range Organics
IDW	Investigation Derived Waste
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
LDRC	Laboratory Data Review Checklist
LOQ	Limit of Quantitation
LRA	Limited Removal Action
µg/L	Micrograms per liter
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MS/MSD	Matrix Spike/Matrix Spike Duplicate
OVM	Organic Vapor Meter
PAH	Polynuclear Aromatic Hydrocarbons
PID	Photoionization Detector
PPE	Personnel Protection Equipment
PVC	Polyvinyl Chloride
RPD	Relative Percent Difference
RRO	Residual Range Organics
SGS	SGS North America Inc. of Anchorage, Alaska
SIM	Selective Ion Mode
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound

ENVIRONMENTAL MANAGEMENT PLAN
459 BLUFF ROAD
ANCHORAGE, ALASKA
FILE NUMBER: 2100.38.321

1.0 INTRODUCTION

This document constitutes the environmental management plan (EMP) for handling potentially contaminated soil and groundwater that may be encountered during construction associated with a planned truck loading rack construction project including installing storm water drain and holding tank at the Crowley bulk storage facility in Anchorage, Alaska. Written authorization to proceed with this project was received from Crowley Fuels, LLC (Crowley), in the form of a purchase order dated April 25, 2017.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Location

The project site is located at the Port of Anchorage at 459 West Bluff Drive, Anchorage, Alaska. A vicinity map showing the project site and surrounding area is included as Figure 1. A site plan is included as Figure 2.

2.2 Project Purpose and Objectives

The purpose of this EMP is to specify how potentially contaminated soil and groundwater will be handled during construction activities in compliance with Alaska Department of Environmental Conservation (ADEC) 18 Alaska Administrative Code (AAC) 75 regulations. To support the specific disposal methods this document also includes results of the May 2017 soil and groundwater results at the site. According to the April 2017 project drawings the project objectives include the relevant components of the construction project are:

- Demolition of the existing tank truck loading facility and replacing it with a new facility.
- Construction of a pump building and a storm water holding tank.
- Installation of a new water line connection extending to the pump building from the existing main in West Bluff Drive.

The boring locations and proposed construction elements are shown the attached Figure 3 provided by Crowley. This EMP will be submitted to ADEC and Environmental Protection Agency (EPA) for review and approval prior to implementation.

3.0 MAY 2017 FIELD ACTIVITIES

The field activities were conducted in material accordance with our May 3, 2017 work plan and the ADEC's work plan approval letter dated May 3, 2017. Field activities were conducted in May 2017, and consisted of conducting utility locates, advancing and sampling six soil borings, and installing and collecting water samples from two temporary water wells.

Field work was conducted by an ADEC-qualified environmental professional, as defined by 18 Alaska Administrative Code (AAC) 75.333. Discovery Drilling, Inc. (Discovery) of Anchorage, Alaska advanced the soil borings and installed the temporary water wells. Analytical testing of the project samples was conducted by SGS North America Inc. (SGS) of Anchorage, Alaska. Discovery and SGS were subcontracted to Shannon & Wilson.

Site photographs taken during field activities are provided in Appendix A, and field notes are provided in Appendix B.

3.1 Site Preparation

Prior to initiating field activities, a Shannon & Wilson representative met Crowley representatives and a private utility locate contractor, Ken Ihde, to locate buried utilities in the project area and identify potential conflicts.

3.2 Soil Boring Drilling and Sampling

Six soil borings, designated Borings B1 through B6, were advanced on May 17, 2017 by Discovery. The soil borings were located as follows:

- Boring B1 was advanced to 10.3 feet below ground surface (bgs) within the proposed truck rack footprint, in the vicinity of the catch basin.
- Boring B2 was advanced to 10.3 feet bgs southeast of the truck rack and northwest of the proposed location of the storm water holding tank, along the proposed drain line.
- Borings B3 and B4 were advanced to 10.65 feet bgs near the northwest corner of the pumphouse building, in the vicinity of the new storm water holding tank. Boring B4 was advanced to approximately 3.8 feet below the observed soil/groundwater interface to install a temporary monitoring well.
- Boring B5 was advanced to 15.5 feet bgs at the location of the new water service line near the new pump house. The boring was advanced to approximately 3.9 feet below the observed soil/groundwater interface to install a temporary monitoring well.
- Boring B6 was advanced to 10.65 feet bgs within the new utility corridor.

Discovery used a GeoProbe® direct push rig equipped with 2-inch diameter samplers to advance the borings. Soil samples were recovered on a continuous basis using 5-foot sampling sleeves. Each 5-foot section of plastic sleeve was removed from the sampling device and split down the long axis. The soil section was then visually subdivided into 2.5-foot intervals for sampling

purposes, if practicable based on sample recovery length. Potentially disturbed soil at the top and bottom of the sampler was excluded from the samples. Once the appropriate sample sections/intervals were established, a stainless steel spoon was used to collect soil samples. Each soil sample was visually described for soil type, and “screened” for volatile organic compounds (VOCs) using a Thermo Instruments organic vapor meter (OVM) 580B photoionization detector (PID) calibrated with 100 parts per million (ppm) isobutylene standard gas, and an ADEC-approved headspace sampling method. Headspace samples were collected in re-sealable plastic bags, warmed to a common temperature, and tested within 60 minutes of collection. To screen, the sample will be agitated for about 15 seconds, the seal of the bag was opened slightly, the instrument probe was inserted into the air space above the soil, and the bag held closed around the probe. The maximum ionization response as the PID draws vapor from the sample bag was recorded.

Based on the results of the headspace screening and/or field observations, one analytical soil sample from each boring was selected for laboratory testing. Generally, samples were collected within the top 5 feet from the interval with the highest PID reading. These sample intervals were generally just above the smear zone (as compared to measured static water levels). A duplicate soil sample was not collected due to insufficient soil volume in the macrocore samplers.

Soil samples for laboratory analysis were collected in laboratory-supplied jars in decreasing order of volatility. The analytical soil samples tested for volatile constituents were collected using methanol preservation. In accordance with the method, at least 25 grams of soil, but no more than what could be completely submerged with 25-milliliters of methanol, were placed into a pre-weighed, 4-ounce glass jar with a septa lid. A 25-milliliter aliquot of methanol containing laboratory-added surrogates was added to the sample jar to submerge the soil sample. For each soil sample submitted for non-volatile analysis, the laboratory-supplied jar was completely filled with soil taking care to remove gravel and debris (if present). Sample jars were filled using decontaminated stainless steel spoons, and placed in coolers with ice packs. The sample descriptions are summarized in Table 1 and on the boring log included in Appendix C.

After soil samples were collected and temporary wells removed (as applicable) the boreholes were backfilled with their respective drill cuttings, hydrated bentonite chips, and cold patch asphalt to match the surrounding surface grade. The horizontal position of the boreholes/temporary wells were recorded using swing tie measurements to site features.

3.3 Temporary Wells and Groundwater Sampling

The two temporary wells (G4 and G5) which consisted of 1-inch diameter, slotted polyvinyl chloride (PVC) pipe, were installed on May 17, 2017 by Discovery. The temporary wells were left undisturbed in the bottom of Borings B4 and B5 for approximately 2.5 hours to allow groundwater to equilibrate. Sampling was initiated using a water level indicator to measure depth to water in the well casings. Grab groundwater samples were collected with disposable polyethylene mini-bailers from the temporary wells. The wells were not purged or developed prior to sampling, therefore the groundwater samples collected from the temporary wells are

considered screening level quality to assess the presence or absence of petroleum-impacted groundwater. Analytical samples were collected by transferring water directly from the bailer into the laboratory supplied containers. The sample jars were filled in decreasing order of volatility.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions observed during the drilling and temporary well sampling are discussed below and provided in the borings logs included as Appendix C.

4.1 Soil

Surficial concrete ranged from 0.5 foot to 0.65 foot encountered in Borings B3 through B6, and approximately 0.3 foot of asphalt was encountered in Borings B1 and B2. Subsurface material encountered during current and former field efforts has consisted primarily of alternating layers of sands and gravels underlain by peat and/or clay. Peat was encountered at depths of approximately 10 feet bgs in Borings B3 and B4, and 9.5 feet bgs in Borings B5. Clay was encountered at approximately 14.5 to 15.5 feet in Borings B5, at the base of the boring. The soils in each boring exhibited hydrocarbon odors. Full descriptions of the observed soil types are provided on boring logs included in Appendix C.

4.2 Groundwater

During the May 2017 drilling activities, groundwater was encountered at approximately 5.8 feet bgs in Boring B1, 6.5 feet bgs in Borings B2, B3, and B6, 7.5 feet in Boring B4, and 8.5 feet bgs in Boring B5. Depth to groundwater were measured from 3.80 feet to 3.90 feet bgs in Borings/Temporary Wells B4/G4 and B5/G5, respectively. The water level increased 3.7 feet in Well G4 and 4.6 feet in Well G5 between the water level observed during drilling and the static water level measured. A sheen was observed in the bailer and sample jars from the temporary wells during the sampling event.

5.0 LABORATORY ANALYSIS

Soil and groundwater samples were delivered to SGS using chain-of-custody procedures. The samples were tested on a standard 5-day turnaround time. Each project sample, including the field duplicate sample, was analyzed for gasoline range organics (GRO) by Alaska Method (AK) 101, diesel range organics (DRO) by AK 102, residual range organics (RRO) by AK 103, and volatile organic compounds (VOC) by Environmental Protection Agency (EPA) Method 8260C. Each soil sample was also analyzed for toxicity characteristic leaching procedure (TCLP) benzene by EPA Method 1311/8260B. In addition, one soil sample was analyzed for polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270 SIM. A methanol trip blank accompanying the soil samples and a water trip blank accompanying the groundwater samples was analyzed for GRO/VOCs by AK 101/EPA Method 88260C. Analytical results are summarized in Tables 3 and 4. Copies of the laboratory reports are provided in Appendix D.

The soil and groundwater results were compared to applicable cleanup levels listed in the Oil and Other Hazardous Substances Pollution Control Regulations, 18 AAC 75 (November 2016). The soil criteria are based on the most stringent ADEC Method 2 cleanup levels listed in Tables B1 and B2 for the “under 40-inch (precipitation) zone,” 18 AAC 75.341. Groundwater criteria are based on Table C, 18 AAC 75.345. The benzene TCLP data were compared to the RCRA Table D characteristic waste criterion presented in 40 Code of Federal Regulations (CFR) 261.24. The cleanup levels and analytical results for the soil/groundwater are listed in Tables 3 and 4, respectively. Copies of the analytical laboratory reports are provided in Appendix D.

5.1 Soil Samples

Six soil samples, comprising one from each soil boring, were submitted for laboratory analysis. The GRO, DRO, benzene, total xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzenewere, and naphthalene concentrations reported in each sample exceed the most stringent ADEC Method 2 cleanup levels. Ethylbenzene in Samples B1S1, B2S1, B3S1, and B4S1; n-propylbenzene in Sample B1S1; and 1-methylnaphthalene, 2-methylnaphthalene, benzo(a)anthracene, and phenanthrene concentrations reported in Sample B6S1 also exceed the most stringent ADEC Method 2 cleanup levels.

The TCLP benzene concentrations measured in Samples B5S1 and B6S1 (0.00600 and 0.00750 mg/L, respectively [estimated concentrations]) are less than the RCRA toxicity characteristic criterion of 0.5 mg/L. TCLP benzene was not detected in the remaining four project soil samples.

The remaining target analytes were either not detected, or were reported at concentrations less than most stringent ADEC Method 2 cleanup level.

5.2 Groundwater Samples

Two groundwater samples (Wells G4 and G5) and one field duplicate sample (G15 duplicate of G5) were submitted for laboratory analysis. The GRO, DRO, RRO, benzene, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, benzo(a)anthracene, and benzo[a]pyrene concentrations reported in each sample exceed the ADEC Table C cleanup levels. 1,2-dichloroethane in Sample G4; and benzo[b]fluoranthene, benzo[g,h,i]perylene, and indeno[1,2,3-c,d] pyrene in Samples G5 and G15 (duplicate of GW) also exceed the ADEC Table C cleanup levels.

The remaining target analytes were either not detected or were detected at concentrations less than the ADEC Table C cleanup levels.

5.3 Quality Assurance Summary

The project laboratory implements on-going quality assurance/quality control procedures to evaluate conformance to applicable ADEC data quality objectives (DQOs).

External quality controls include field records, groundwater duplicate sample sets, and trip blanks for the soil and groundwater samples. The water trip blank did not contain detectable concentrations of volatile analytes. The soil trip blank contained toluene at an estimated concentration less than the LOQ, which is flagged “J” in Table 2. Because the samples associated with the trip blank are greater than 10 times the reported trip blank concentration, the data are considered usable for the purpose of this report.

A duplicate groundwater sample set was collected to assess the sampling precision and calculate the relative percent difference (RPD). The RPD between the project sample and associated duplicate results is a measure of precision affected by matrix heterogeneity, sampling technique, and laboratory analyses. The ADEC recommends an RPD of less than 30 percent for groundwater field duplicates, and 20 percent for laboratory control samples. The RPDs are within the ADEC recommended DQO of 30 percent for groundwater in the duplicate groundwater sample set (G5/G15), with the exception of 4-isopropyltoluene, isopropylbenzene, n-propylbenzene, and tert-butylbenzene which were calculated to be 48 percent, 31 percent, 52 percent, and 54 percent, respectively. There is no ADEC Table C cleanup level for 4-isopropyltoluene or n-propylbenzene, therefore it is our opinion the RPD non-conformance do not impact data usability for the objectives of this project. Isopropylbenzene and tert-butylbenzene were detected at least one order of magnitude below their ADEC cleanup criterion. Therefore, it is our opinion that the RPD failure does not impact data usability for the objectives of this project.

Internal laboratory controls to assess data quality for this project include surrogates, method blanks, laboratory control sample/laboratory control sample duplicates (LCS/LCSD), and matrix spike/matrix spike duplicates (MS/MSD) to assess precision, accuracy, and matrix bias. If a DQO was not met, the project laboratory provides a report specific note identifying the problem in the Case Narrative section of their Laboratory Analysis Report (See Appendix D). DRO was detected in the method blank associated with the water Samples G4, G5, and G15 at a concentration greater than the laboratory reporting limit. However, the DRO concentrations in the project water samples associated with the method blank are greater than 10 times the reported method blank concentration.

Shannon & Wilson reviewed the SGS data deliverables and completed the ADEC’s Laboratory Data Review Checklist (LDRC) for each data package, which are included in Appendix D. Quality control discrepancies and the impact to data quality/usability are described in further detail in the LDRCs. In our opinion, no non-conformances that would adversely impact data usability for project data objectives were noted, and we find the project data to be complete and useable to support the project purpose and objectives.

6.0 PROCEDURES FOR HANDLING EXCAVATED SOIL

Based on existing data, including the May 2017 soil and groundwater samples, impacted soil and groundwater will be encountered during the planned truck loading rack construction project.

6.1 Soil Screening

Soil handling during construction should be conducted in a manner that prevents the release of contaminants to surface water. A QEP contracted by the owner will be on site during excavation activities for the project. The QEP will conduct field screening with a photoionization detector (PID) to document site conditions. Field screening will be accomplished with a hand-held PID that measures total volatile compounds present as vapors, as a semi-quantitative indication of petroleum hydrocarbon. The PID will be calibrated daily using a response factor for benzene and 100 parts per million (ppm) isobutylene-in-air standard gas, or as directed by the PID's instruction manual. Additional calibration checks may be performed during the day, as deemed appropriate. All field screening activities will be performed in accordance with the ADEC's March 2016 Field Sampling Guidance document. No analytical samples will be collected during the EMP activities.

Due to the low volume of soil to be excavated, soil screening readings will be collected at a frequency of one reading for every 5 cubic yards (cy) of material removed. This frequency may be decreased if substantially greater soil volumes are excavated. Soil samples for screening will be collected from freshly excavated soil, either from the excavator bucket or temporary soil stockpiles as they are generated, using a direct screening method. To screen, a small divot will be made in the freshly excavated soils using a clean stainless steel spoon, or other implement, and the instrument probe will be inserted into the divot until readings stabilize or begin to decrease. The highest displayed reading will be recorded. If soil temperatures are below 40 degrees Fahrenheit (°F) the samples will be screened using an ADEC-approved headspace screening method. Headspace screening is performed by placing screening samples in a re-sealable plastic bag to approximately one-half of its capacity using a clean stainless steel spoon. The samples are then warmed for at least 10 minutes, but not more than one hour. The temperature of the samples should be consistent, and must be at least 40 degrees °F prior to screening. To screen, the sample will be agitated for about 15 seconds, the seal of the bag will be opened slightly, the instrument probe will be inserted into the air space above the soil, and the bag held closed around the probe.

6.2 Soil Disposal

Based on May 2017 soil sample results, petroleum hydrocarbon-impacted soil with (1) concentrations of petroleum hydrocarbons exceeding the most stringent ADEC Method 2 cleanup criteria, (2) concentrations less than the TCLP benzene regulatory level, and (3) no detectable concentrations of chlorinated volatile organic compounds are present in the boring locations at the site. Therefore, excess soil during construction activities will be assumed to be petroleum hydrocarbon-impacted and transported to Alaska Soil Recycling (ASR) for treatment and

disposal. To the extent practicable, the soil will be placed in trucks for direct haul to ASR. If circumstances exist where temporary stockpiling is necessary, the soil will be placed either on an asphalt surface or a 10-mil liner, and covered with a minimum 6 mil liner that is secured on all sides while soil is not being actively placed in the stockpile.

Written authorization from the ADEC will be required prior to transporting impacted soil. An *ADEC Transport, Treatment, & Disposal Approval Form for Contaminated Media* is included in Appendix E and can be used for this purpose if signed by ADEC. Note that off-site transport/disposal of soil to a location such as ASR must be pre-approved by the ADEC.

Soil hauled to ASR will be transported in covered vehicles and otherwise in accordance with all local, state and federal regulations, including applicable U.S. Department of Transportation (DOT) and ADEC requirements. If the soil is wet, the vehicle will be lined to prevent the loss of material during transport. The contractor will be responsible for tracking soil volumes and retain ASR weight receipts. This information will be submitted to the Owner's on-site representative for verification on a daily basis.

7.0 PROCEDURES FOR HANDLING IMPACTED GROUNDWATER

Based on prior information and the project drawings provided, we anticipate that the primary dewatering need will be at the excavations for the water line and holding tank. We assumed that the holding tank excavation would have a footprint of 112 square feet at the water table (8 feet wide by 14 feet long). We assumed that the entire water line length of 79 feet would be open at once and the width of the trench at the water table would be 5 feet.

Handling potentially impacted groundwater will be require two different permits; an excavation dewatering permit and a discharge permit. For dewatering Crowley has submitted the Alaska Department of Natural Resources (ADNR) Temporary Water Use Authorization, and that ADNR has requested more info on discharge before authorization.

The discharge authorization permit will be obtained by the construction contractor. Due to the proximity of contaminated sites to the project, the generated water cannot be discharged under a Construction General Permit. Instead, the contractor will need to obtain permit coverage under either the ADEC Excavation Dewatering General Permit or the Anchorage Water and Wastewater Industrial Pre-Treatment permit. Treatment of the generated water may also be required; the level of treatment may vary based on the authorized discharge permit.

The actual number, design, and performance of temporary dewatering components will be the responsibility of the selected Contractor's means, methods, schedule, and treatment under these permit(s).

8.0 HEALTH AND SAFETY MONITORING

Contractors working on-site will develop and implement their own site-specific health and safety plan. Workers that may be in contact with potentially impacted soil and/or water must have completed the appropriate Hazardous Site Operations training requirements specified in 29 CFR 1910.120(e). Before the start of work activities each day, field representatives and the field construction team will hold a tailgate safety meeting to discuss excavation procedures and safety issues at the project site.

Based on the information collected to date, we are assuming that the contaminants are non-hazardous and Level D, and potentially Level C, personnel protection equipment (PPE) is sufficient. The required PPE will be determined on a daily basis, as outlined in the health and safety plans prepared by the individual contractors for their own employees.

9.0 DOCUMENTATION

The contractor will maintain notes that discuss earthwork activities, areas disturbed, where soil was placed at the site, other soil movements, and whether evidence of contamination was observed and soil screening and sampling activities. The Owner's representative's field screening daily field notes will be recorded in a bound notebook that will include a description of field activities. This notebook will contain the following:

- Documentation of project progress with notes, sketches of the extent of contamination, photographs, and construction manager decisions.
- Daily volumes of soil excavated, screening data for any replaced soil, and estimated volumes of soil transported off-site for thermal treatment and disposal.
- PID screening results of potentially impacted excavated soil.
- Copies of ASR disposal receipts.
- Instrument calibration records.

A summary report will be prepared by Crowley to document field activities, soil screening/sampling data, and the final disposition of the contaminated soil generated. Photographs, copies of field notebooks, and field sketches will be included in appendices. Field screening data will be summarized in tables.

10.0 CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our clients and their representatives in the study of this site. The findings presented within this report are based on the limited sampling and analyses that we conducted. They should not be construed as definite conclusions regarding the project site's soil and groundwater conditions. It is possible that our subsurface tests missed higher levels, although our intention was to sample areas likely to be impacted and in accordance with the ADEC-approved work plan. As a result, the sampling and analyses performed can only

provide you with our professional judgment as to the environmental characteristics of this site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur over time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

Shannon & Wilson has prepared the attachments in Appendix F, "Important Information About Your Geotechnical/Environmental Report," to clarify use and limitations of our report. You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore, has not, and will not, disclose the results of this study, except with your permission or as required by law.

We appreciate the opportunity to be of service. Please contact the undersigned at (907) 561-2120 with any questions or comments concerning the contents of this report.

SHANNON & WILSON, INC.



Trevor Crosby, C.P.G.
Environmental Scientist



Matthew Henry, P.E.
Vice President

TABLE 1
SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 2 and Appendix C)	Depth (feet bgs)	Headspace (ppm) ^
<u>Soil Samples</u>				
Boring B1				
* B1S1	5/17/2017	Boring B1, Sample 1	0.3-5.3	843
B1S2	5/17/2017	Boring B1, Sample 2	5.3-10.3	417
Boring B2				
* B2S1	5/17/2017	Boring B2, Sample 1	0.3-5.3	817
B2S2	5/17/2017	Boring B2, Sample 2	5.3-10.3	591
Boring B3				
* B3S1	5/17/2017	Boring B3, Sample 1	0.65-5.65	716
B3S2	5/17/2017	Boring B3, Sample 2	5.65-10.65	446
Boring B4				
* B4S1	5/17/2017	Boring B4, Sample 1	0.65-5.65	621
B4S2	5/17/2017	Boring B4, Sample 2	5.65-10.65	488
Boring B5				
* B5S1	5/17/2017	Boring B5, Sample 1	0.5-5.5	595
B5S2	5/17/2017	Boring B5, Sample 2	5.5-10.5	484
B5S3	5/17/2017	Boring B5, Sample 3	10.5-15.5	-
Boring B6				
* B6S1	5/17/2017	Boring B6, Sample 1	0.65-5.65	914
B6S2	5/17/2017	Boring B6, Sample 2	5.65-10.65	702
<u>Water Samples</u>				
* G4	5/17/2017	Temporary Well G4	3.8	-
* G5	5/17/2017	Temporary Well G5	3.9	-
* G15	5/17/2017	Duplicate of Sample G5	3.9	-
<u>Quality Control Samples</u>				
* STB	5/17/2017	Soil Trip Blank	-	-
* WTB	5/17/2017	Water Trip Blank	-	-

Notes:

- * = Sample analyzed by the project laboratory (See Tables 2 and 3)
- ^ = Field screening instrument was a Thermo Environmental Instruments 580B photoionization detector (PID).
- = Measurement not recorded or not applicable
- bgs = below ground surface
- ppm = parts per million

TABLE 2
SOIL SAMPLE ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Level**	Boring ID, Sample Source, ID Number^, and Collection Depth in Feet bgs (See Table 1, Figure 2, and Appendix C)						
			Boring B1	Boring B2	Boring B3	Boring B4	Boring B5	Boring B6	Trip Blank
			B1S1 0.3-5.3	B2S1 0.3-5.3	B3S1 0.65-5.65	B4S1 0.65-5.65	B5S1 0.5-5.5	B6S1 0.65-5.65	STB -
Headspace Reading - ppm	OVM 580B	-	843	817	716	621	595	914	-
Gasoline Range Organics (DRO) - mg/kg	AK 101	300	608 J+	389 J+	649 J+	830 J+	489 J+	661	<0.955
Diesel Range Organics (DRO) - mg/kg	AK 102	250	851	777	3,230	2,110	2,360	6,060	-
Residual Range Organics (RRO) - mg/kg	AK 103	10,000	754	437	152	315	205	174	-
Volatile Organic Compounds (VOCs)									
Benzene - mg/kg	EPA 8260C	0.022	1.25	0.255	0.245	0.227	0.0730	0.220	<0.00478
Toluene - mg/kg	EPA 8260C	6.7	1.63	0.675	0.898	1.40	0.218	0.818	0.00722 J
Ethylbenzene - mg/kg	EPA 8260C	0.13	9.81	2.640	0.480	0.505	0.0454 J	0.0751 J	<0.00955
Xylenes (total) - mg/kg	EPA 8260C	1.5	92.70	33.00	94.3	99.4	35.4	113	<0.0286
1,2,4-Trimethylbenzene - mg/kg	EPA 8260C	0.16	153 J+	67.6 J+	57.9 J+	83 J+	119 J+	115 J+	<0.0191
1,3,5-Trimethylbenzene - mg/kg	EPA 8260C	1.3	48.9 J+	20.5 J+	49.9 J+	78.6 J+	56.6 J+	50.4 J+	<0.00955
4-Isopropyltoluene - mg/kg	EPA 8260C	-	4.23 J+	1.8 J+	6 J+	8.08 J+	4.13 J+	4.29 J+	<0.00955
Isopropylbenzene - mg/kg	EPA 8260C	-	3.37	1.4	0.0352 J	0.123	<0.0415	0.164	<0.00955
Naphthalene - mg/kg	EPA 8260C	0.038	12.9 J+	5.78 J+	11.8 J+	28.9 J+	15.00 J+	13.9 J+	<0.00955
n-Propylbenzene - mg/kg	EPA 8260C	9.1	10.2 J+	3.53 J+	0.0536 J+	0.184 J+	0.0513 J+	0.251 J+	<0.00955
sec-Butylbenzene - mg/kg	EPA 8260C	28	1.79 J+	0.667 J+	0.23 J+	0.575 J+	<0.0415	0.569 J+	<0.00955
tert-Butylbenzene - mg/kg	EPA 8260C	11	0.567 J+	0.223 J+	0.467 J+	0.728 J+	0.432 J+	0.53 J+	<0.00955
Other VOCs - mg/kg	EPA 8260C	varies	ND	ND	ND	ND	ND	ND	ND
TCLP Benzene - mg/L	EPA 1311/8260	0.5***	<0.0100	<0.0100	<0.0100	<0.0100	0.00600 J	0.00750 J	
Polynuclear Aromatic Hydrocarbons (PAHs)									
1-Methylnaphthalene - mg/kg	8270D-SIM	0.41	-	-	-	-	-	13.8	-
2-Methylnaphthalene - mg/kg	8270D-SIM	1.3	-	-	-	-	-	17.4	-
Acenaphthene - mg/kg	8270D-SIM	37	-	-	-	-	-	0.630	-
Anthracene - mg/kg	8270D-SIM	390	-	-	-	-	-	0.197 J	-
Benzo(a)Anthracene - mg/kg	8270D-SIM	0.28	-	-	-	-	-	0.349 J	-
Benzo[b]Fluoranthene	8270D-SIM	2	-	-	-	-	-	0.296 J	-
Chrysene - mg/kg	8270D-SIM	82	-	-	-	-	-	0.499 J	-
Fluoranthene - mg/kg	8270D-SIM	590	-	-	-	-	-	0.888	-
Fluorene - mg/kg	8270D-SIM	36	-	-	-	-	-	1.410	-
Naphthalene - mg/kg	8270D-SIM	0.038	-	-	-	-	-	12.700	-
Phenanthrene - mg/kg	8270D-SIM	39	-	-	-	-	-	2.160	-
Pyrene - mg/kg	8270D-SIM	87	-	-	-	-	-	0.867	-
Other PAHs - mg/kg	8270D-SIM	varies	-	-	-	-	-	<0.0260	-

Notes:

- * = See Appendix D for compounds tested, methods, and laboratory reporting limits
- ** = Soil cleanup level is the most stringent ADEC Method Two standard listed in Table B1 or B2, 18 Alaska Administrative Code (AAC) 75, for the "under 40 inches (precipitation) zone" (November 2016).
- *** = TCLP benzene regulatory level is presented in 40 CFR 261.24
- ^ = sample ID No. preceded by "17863-" on the chain of custody form.
- 608** = reported concentration exceeds the ADEC cleanup level
- 754** = analyte detected
- <0.223 = analyte not detected; laboratory limit of detection of 0.223 mg/kg
- ppm = parts per million
- mg/kg = milligrams per kilogram
- bgs = below ground surface
- = not applicable or sample not tested for this analyte
- ND = analyte not detected
- J = quantitation is an estimate less than the limit of quantitation (LOQ). See the SGS laboratory report for details.
- J+ = Analytical result is potentially biased high due to surrogate failure. See ADEC Laboratory Data Review Checklist (LDRC) in Appendix D for details.

TABLE 3
GROUNDWATER SAMPLE ANALYTICAL RESULTS

Parameter Tested	Method*	Groundwater Cleanup Level**	Sample ID Number^ and Water Depth in Feet bgs			
			Temporary Wells			Trip Blank
			G4 3.8	G5 3.9	~G15 3.9	WTB -
Gasoline Range Organics (DRO) - µg/L	AK 101	2,200	20,100	17,100	16,800	<0.0500
Diesel Range Organics (DRO) - µg/L	AK 102	1,500	41,900 J-	53,300 J-	60,400 J-	-
Residual Range Organics (RRO) - µg/L	AK 103	1,100	2,770 J-	2,810 J-	3,250 J-	-
Volatile Organic Compounds (VOCs)						
Benzene - µg/L	EPA 8260C	4.6	369	444	442	<0.200
Toluene - µg/L	EPA 8260C	1,100	280	318	327	<0.500
Ethylbenzene - µg/L	EPA 8260C	15	176	76.0	60.3	<0.500
Xylenes (total) - µg/L	EPA 8260C	190	6,810	5,510	5,520	<1.50
1,2,4-Trimethylbenzene - µg/L	EPA 8260C	15	2,410 J-	3,800 J+	3,570 J+	<0.500
1,2-Dichloroethane - mg/L	EPA 8260C	1.7	8.12	<0.250	<0.250	<0.250
1,3,5-Trimethylbenzene - mg/L	EPA 8260C	120	1,590 J-	1,120 J+	1,160 J+	<0.500
4-Isopropyltoluene - µg/L	EPA 8260C	-	76.4 J-	85.0 J+, E	138 E	<0.500
2-Hexanone - µg/L	EPA 8260C	38	13.0	<5.00	<5.00	<5.00
Isopropylbenzene (Cumene) - µg/L	EPA 8260C	450	10.4	9.69 E	13.3 E	<0.500
Naphthalene - µg/L	EPA 8260C	1.7	819 J-	654 J+	729 J+	<0.500
n-Propylbenzene - µg/L	EPA 8260C	660	8.52 J-	16.0 J+, E	27.2 J+, E	<0.500
sec-Butylbenzene - µg/L	EPA 8260C	2,000	9.31 J-	<0.500	31.4	<0.500
tert-Butylbenzene - µg/L	EPA 8260C	690	10.0 J-	13.2 J+, E	22.9 J+, E	<0.500
Other VOCs - µg/L	EPA 8260C	varies	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (PAHs)						
Acenaphthene - µg/L	EPA 625M SIM	530	4.91 J-	12.2 J-	13.3 J-	-
Anthracene - µg/L	EPA 625M SIM	43	1.39 J-	6.34 J-	7.17 J-	-
Benzo(a)Anthracene - µg/L	EPA 625M SIM	0.12	0.356 J-	1.06 J-	1.15 J-	-
Benzo[a]pyrene - µg/L	EPA 625M SIM	0.034	0.161 J-	0.527 J-	0.576 J-	-
Benzo[b]Fluoranthene - µg/L	EPA 625M SIM	0.34	0.27 J-	0.721 J-	0.749 J-	-
Benzo[g,h,i]perylene - µg/L	EPA 625M SIM	0.26	0.187 J-	0.578 J-	0.605 J-	-
Chrysene - µg/L	EPA 625M SIM	2.0	0.666 J-	1.64 J-	1.79 J-	-
Fluoranthene - µg/L	EPA 625M SIM	260	1.11 J-	2.83 J-	2.45 J-	-
Fluorene - µg/L	EPA 625M SIM	290	6.44 J-	26.2 J-	28.4 J-	-
Indeno[1,2,3-c,d] pyrene - µg/L	EPA 625M SIM	0.19	<0.125	0.230 J-	0.217 J-	-
Naphthalene - µg/L	EPA 625M SIM	1.7	1.600 J-	1.770 J-	1.940 J-	-
Phenanthrene - µg/L	EPA 625M SIM	170	8.58 J-	36 J-	40.3 J-	-
Pyrene - µg/L	EPA 625M SIM	120	2.04 J-	4.75 J-	4.98 J-	-
Other PAHs - µg/L	EPA 625M SIM	varies	ND	ND	ND	-

Notes:

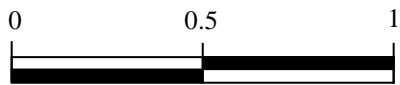
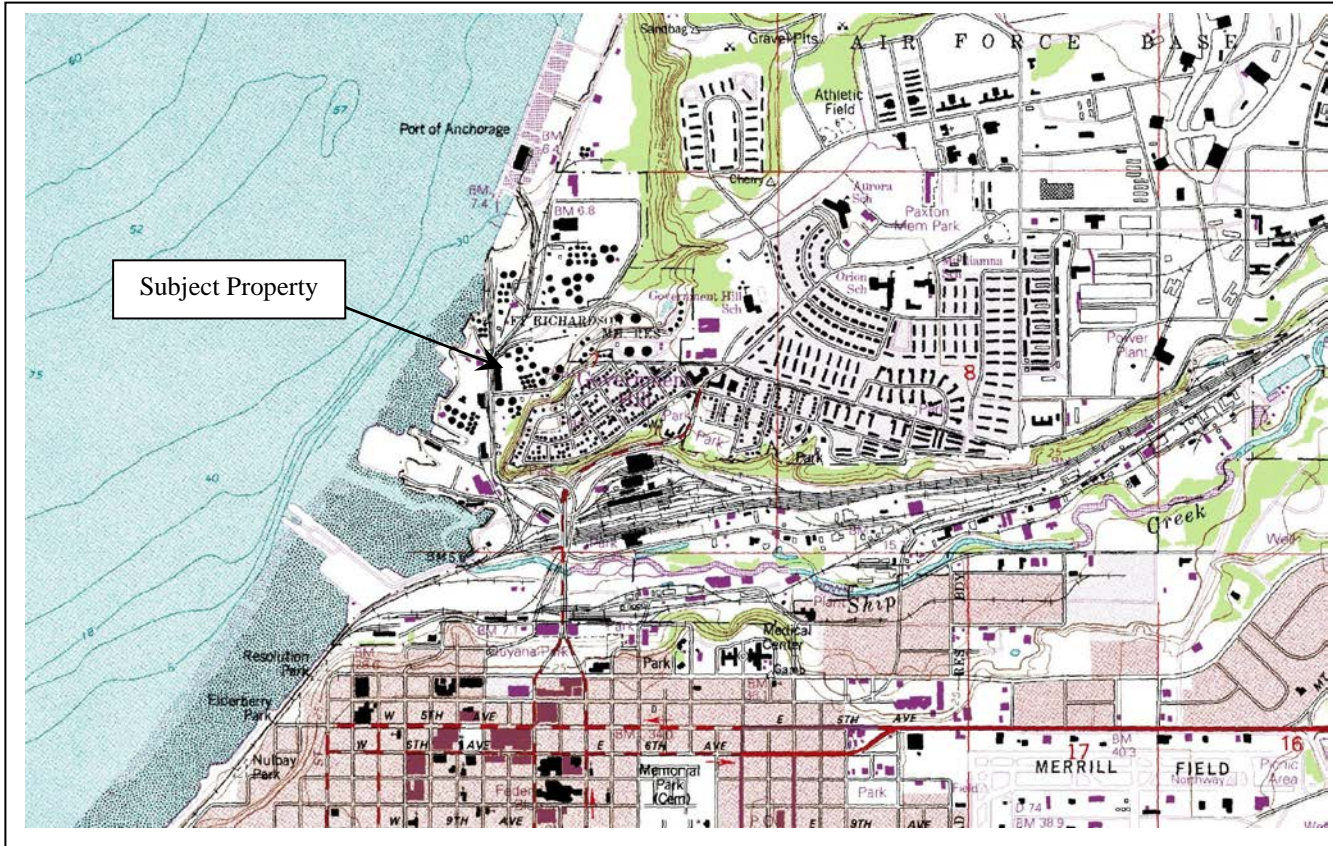
- * See Appendix D for compounds tested, methods, and laboratory reporting limits
- ** Groundwater cleanup levels are listed in Table C, 18 AAC 75.345 (November 2016)
- ^ = sample ID No. preceded by "17863" on the chain of custody form
- µg/L = micrograms per liter
- 280** = analyte detected
- 20,100** = reported concentration exceeds the ADEC Table C cleanup level
- <0.125 = analyte not detected; laboratory limit of detection 0.125 µg/L
- bgs = below ground surface
- = not applicable
- ~ = duplicate of preceding sample
- J** = quantitation is an estimate less than the limit of quantitation (LOQ). See the SGS laboratory report for details.
- J+** = Analytical result is potentially biased high due to surrogate failure. See ADEC LDRC in Appendix D for details.
- J-** = Analytical result is potentially biased low due to surrogate failure. See ADEC LDRC in Appendix D for details.
- ND = analyte not detected
- E = Result is an estimate due to a primary/field duplicate sample pair relative percent difference (RPD) failure. See ADEC LDRC in Appendix D for details.

**TABLE 4
QUALITY CONTROL DATA**

Parameter	Primary Sample G5	Duplicate Sample G15	Precision (RPD)	Precision DQO
Gasoline Range Organics (DRO) - µg/L	17,100	16,800	2%	30%
Diesel Range Organics (DRO) - µg/L	53,300 J-	60,400 J-	12%	30%
Residual Range Organics (RRO) - µg/L	2,810 J-	3,250 J-	15%	30%
Volatile Organic Compounds (VOCs)				
Benzene - µg/L	444	442	0%	30%
Toluene - µg/L	318	327	3%	30%
Ethylbenzene - µg/L	76.0	60.3	23%	30%
Xylenes (total) - µg/L	5,510	5,520	0%	30%
1,2,4-Trimethylbenzene - µg/L	3,800 J+	3,570 J+	6%	30%
1,3,5-Trimethylbenzene - mg/L	1,120 J+	1,160 J+	4%	30%
4-Isopropyltoluene - µg/L	85.0 J+, E	138 E	48%	30%
Isopropylbenzene - µg/L	9.69 E	13.3 E	31%	30%
Naphthalene - µg/L	654 J+	729 J+	11%	30%
n-Propylbenzene - µg/L	16.0 J+, E	27.2 J+, E	52%	30%
sec-Butylbenzene - µg/L	<0.500	31.4	NA	30%
tert-Butylbenzene - µg/L	13.2 J+, E	22.9 J+, E	54%	30%
Other VOCs - µg/L	ND	ND	NA	30%
Polynuclear Aromatic Hydrocarbons (PAHs)				
Acenaphthene - µg/L	12.2 J-	13.3 J-	9%	30%
Anthracene - µg/L	6.34 J-	7.17 J-	12%	30%
Benzo(a)Anthracene - µg/L	1.06 J-	1.15 J-	8%	30%
Benzo[a]pyrene - µg/L	0.527 J-	0.576 J-	9%	30%
Benzo[b]Fluoranthene µg/L	0.721 J-	0.749 J-	4%	30%
Benzo[g,h,i]perylene - µg/L	0.578 J-	0.605 J-	5%	30%
Chrysene - µg/L	1.64 J-	1.79 J-	9%	30%
Fluoranthene - µg/L	2.83 J-	2.45 J-	14%	30%
Fluorene - µg/L	26.2 J-	28.4 J-	8%	30%
Indeno[1,2,3-c,d] pyrene - µg/L	0.230 J-	0.217 J-	6%	30%
Phenanthrene - µg/L	36 J-	40.3 J-	11%	30%
Pyrene - µg/L	4.75 J-	4.98 J-	5%	30%
Other PAHs - µg/L	ND	ND	NA	30%

Notes:


- 48%** Shading and bold indicates that relative percent difference is greater than the quality control limit.
- <0.500 = analyte not detected; laboratory limit of detection 0.500 µg/L
- RPD = relative percent difference
- µg/L = micrograms per liter
- NA = RPDs were not calculated due to non-detect or below laboratory reporting limits results
- DQO = data quality objective
- J = reported concentration is an estimate below the limit of quantitation.
See SGS laboratory report for more details
- E = Result is an estimate due to a primary/field duplicate sample pair relative percent difference (RPD) failure. See ADEC LDRC in Appendix D for details.





Approximate scale in miles

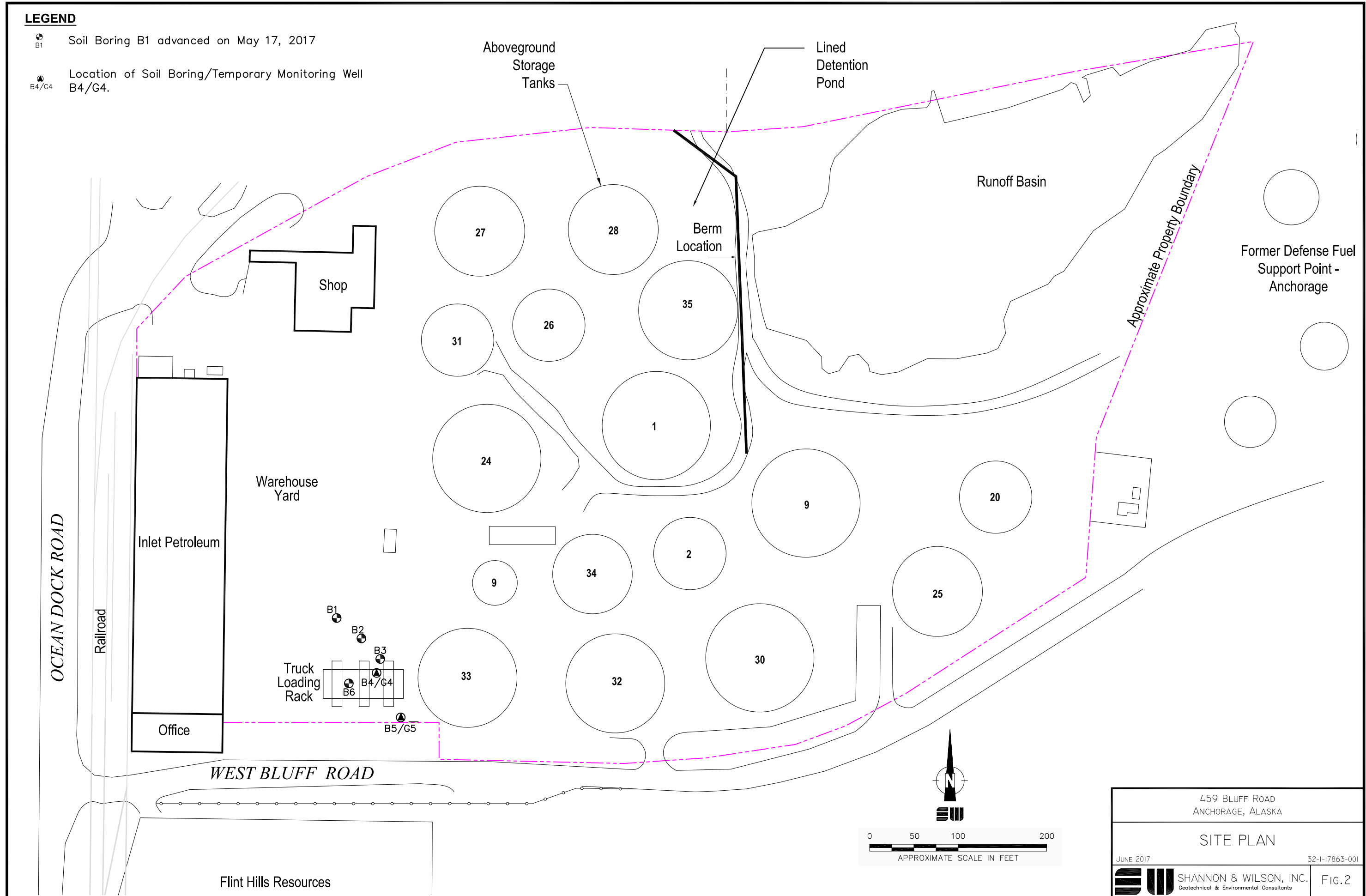
Taken from
Anchorage A-8 NE Quadrangle
U.S. Geological Survey



459 West Bluff Drive Anchorage, Alaska	
VICINITY MAP	
June 2017	32-1-17863-001
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	Fig. 1

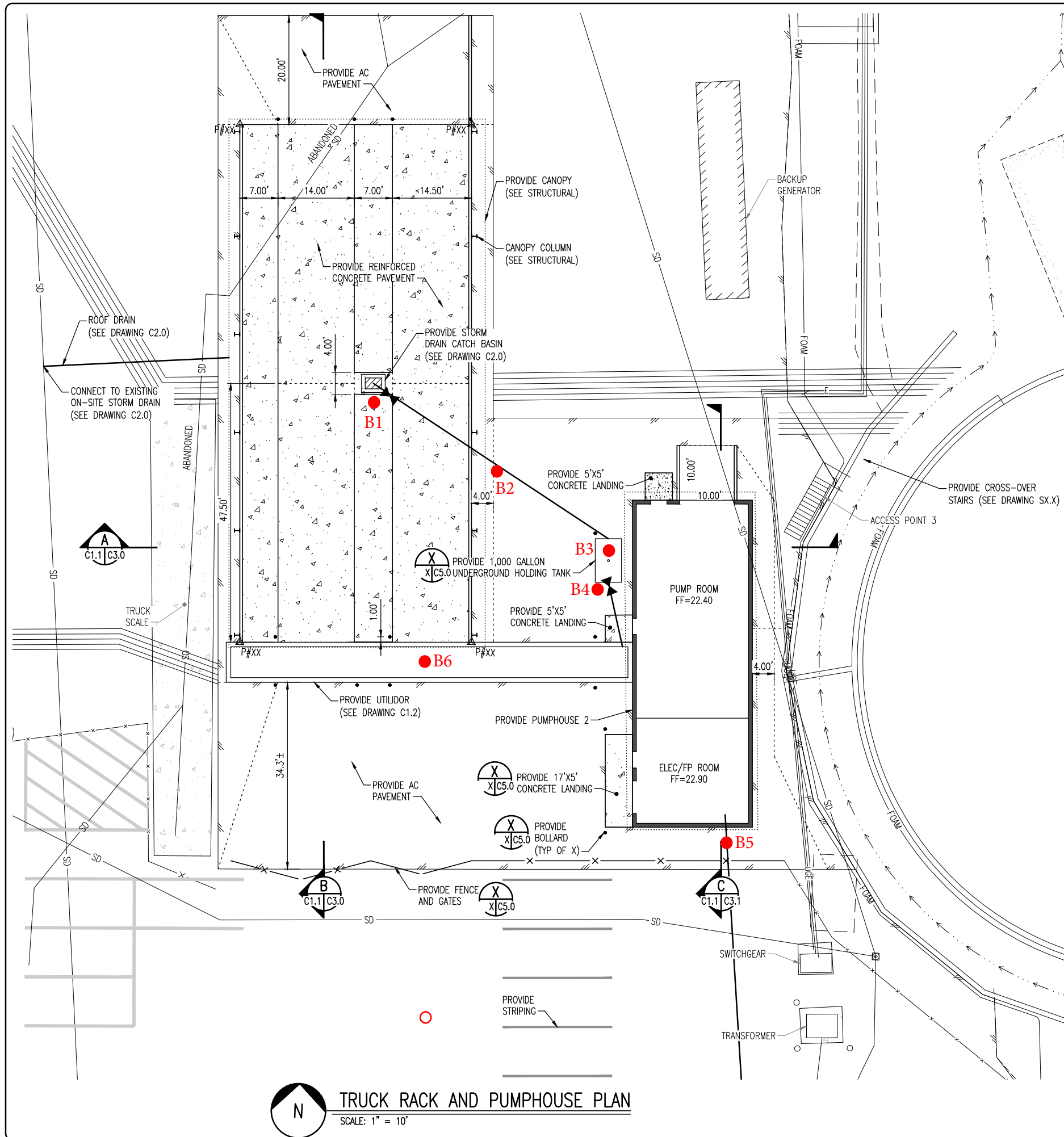
LEGEND

-  Soil Boring B1 advanced on May 17, 2017
-  Location of Soil Boring/Temporary Monitoring Well B4/G4.

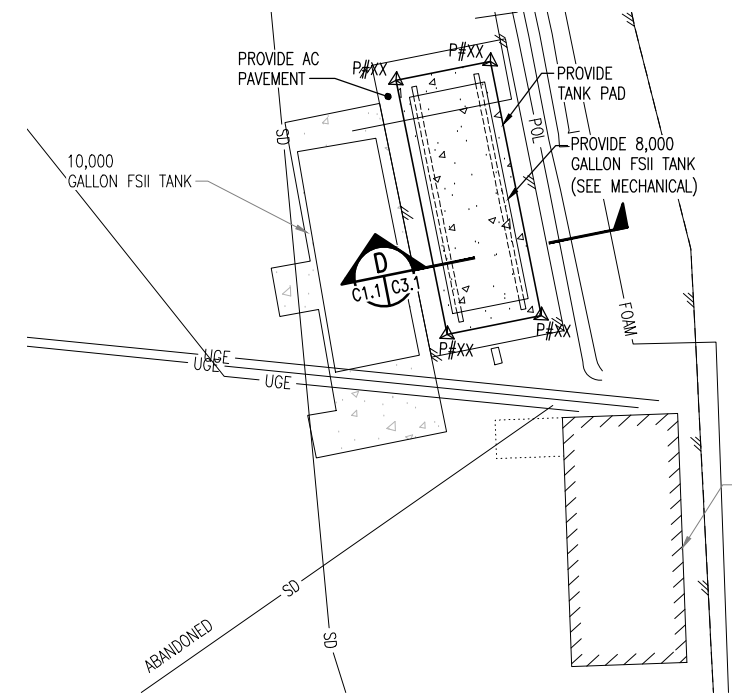


459 BLUFF ROAD ANCHORAGE, ALASKA	
SITE PLAN	
JUNE 2017	32-I-17863-001
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	FIG. 2

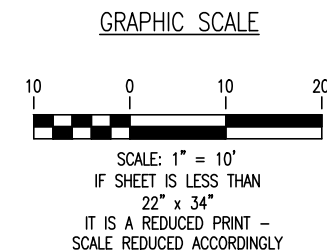
Plot Date: Mar 28, 2017 - 11:12am Drawing File: P:\projects\8821\Cad\Current\Drawings\C11_LE1.dwg Last modified by: ppppp



TRUCK RACK AND PUMPHOUSE PLAN
SCALE: 1" = 10'



FSII TANK PLAN
SCALE: 1" = 10'



CROWLEY FUELS LLC TANK TRUCK LOADING FACILITY

459 W. BLUFF DRIVE
ANCHORAGE, ALASKA 99501

REV	DATE	DESCRIPTION

DESIGN: RPP	SEAL
DRAWN: RPP	
CHKD: CAB	
APRVD: JFK	
SCALE:	

PROGRESS

ENTERPRISE ENGINEERING, INC.
400 US ROUTE 1 NORTH SUITE B FALMOUTH, ME 041015
2525 GAMBELL STREET SUITE 200 ANCHORAGE, AK 99503
TEL: (207) 869-8006 TEL: (907) 563-3835
FAX (207) 869-8015 FAX (907) 563-3817

DRAWING TITLE
TRUCK RACK AND PUMPHOUSE PLAN

DWG NO. 8921	DATE 03/28/17
PN: SW1030/1130	SHEET X OF X

Figure 3

APPENDIX A
SITE PHOTOGRAPHS

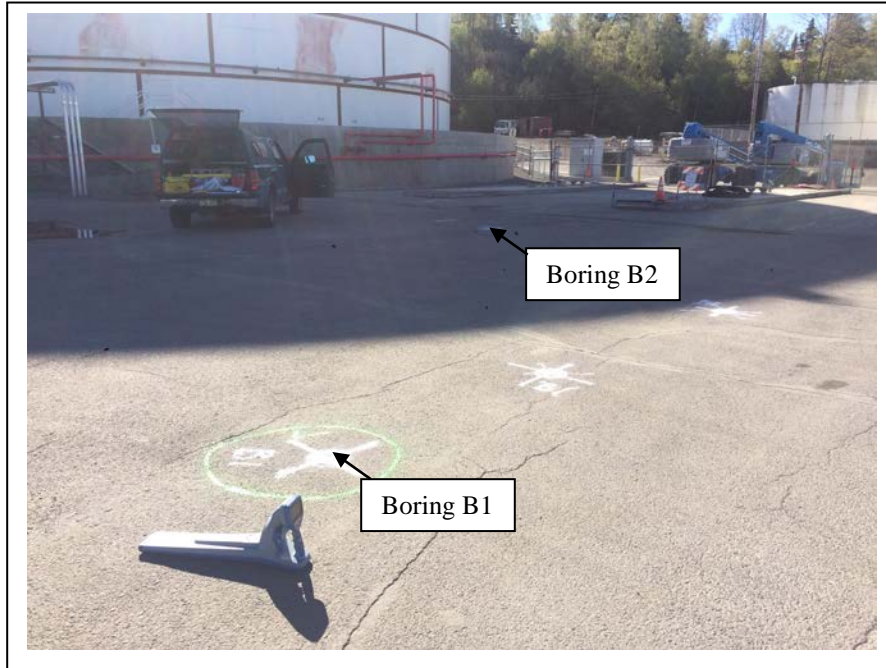


Photo 1: Looking southeast at soil boring locations B1 and B2.
(May 16, 2017)

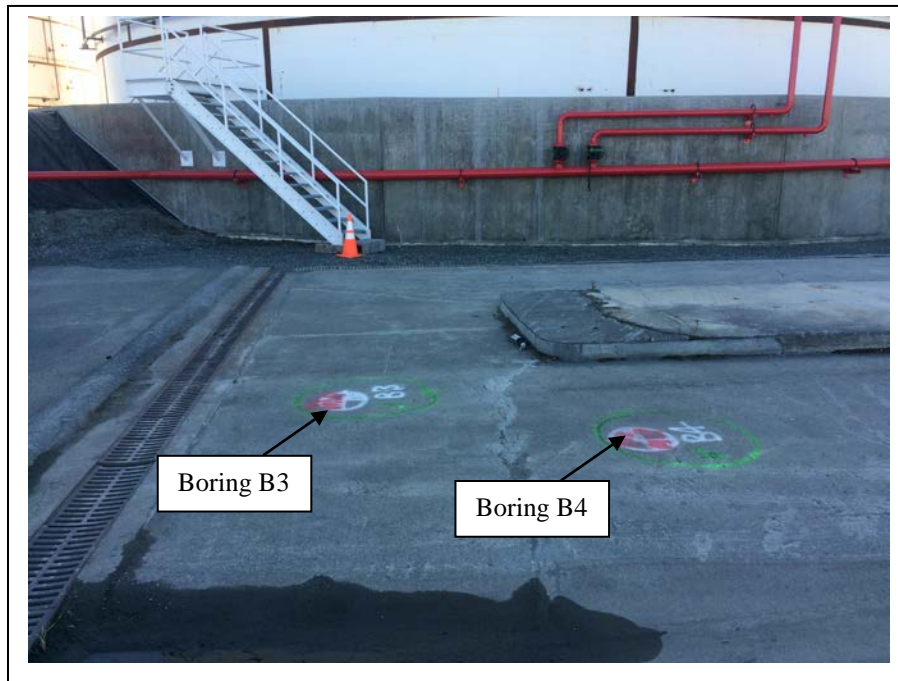


Photo 2: Looking east at soil boring locations B3 and B4.
(May 16, 2017)



Photo 3: Looking east at soil boring location B5. (May 5, 2017)

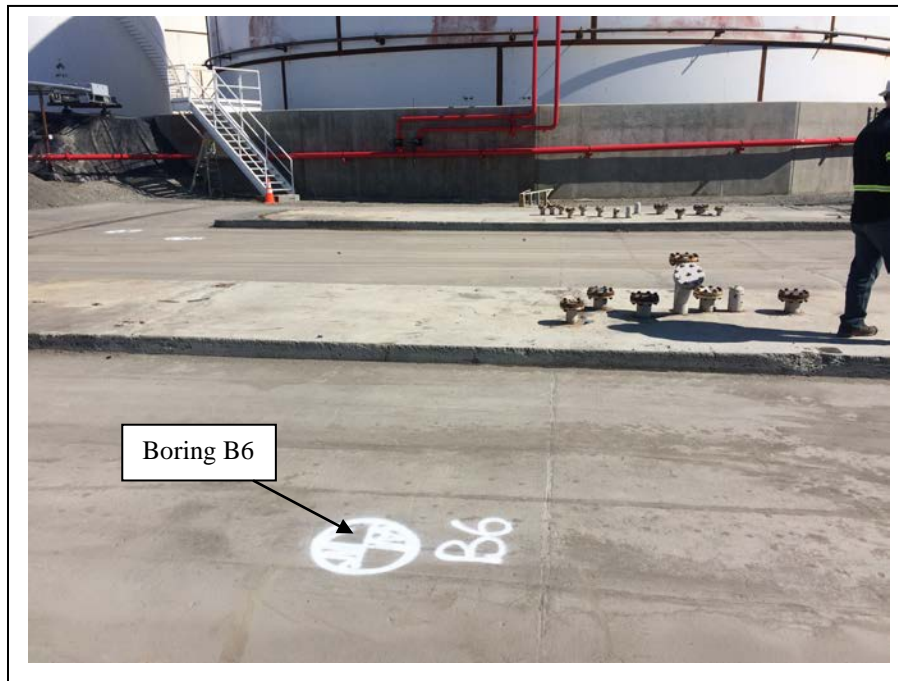


Photo 4: Looking east at soil boring location B6. (May 5, 2017)



Photo 5: Concrete coring at Boring B5; looking southeast.
(May 17, 2017)

APPENDIX B
FIELD NOTES

FIELD ACTIVITIES DAILY LOG

Date 5/16/19

Sheet 1 of 1

Project No. 17863

Project Name: 459 BLUFF ROAD

Field activity subject: INDEPENDENT LOCATE SITE VISIT

Description of daily activities and events:

0920 TREVOR ARRIVE @ CROULEY FACILITY - KEN THOE ONSITE TO PERFORM INDEPENDENT LOCATE FOR BORINGS B1 - B6

TREVOR / KEN LOCATED FINAL BORINGS WITH SWING TIE MEASUREMENTS TO KNOWN POINTS ON FIGURE

DAN WIGGINS ONSITE - IDENTIFIED SOME OF CROULEY FUEL LINES FOR KEN TO LOCATE - KEN -> LOCATED

BORINGS B2 - B6 ARE CLEAR OF CONFLICT. BORING B1 WAS MOVED - PREVIOUSLY IN CONFLICT - NOW CLEARED

KEN - NOTED ALL BORINGS ARE "CLEAR" - DAN SATISFIED W/ LOCATES

1045 TREVOR OFFSITE - READY TO DRILL 5/19/19 @ 830 AM

Visitors on site: DAN WIGGINS (CROULEY), KEN THOE (LOCATOR)

Changes from plans/specifications and other special orders and important decisions:

MOVED BORING B1 TO THE NORTH ~ 15 FEET

Weather conditions: 60°F, SUNNY

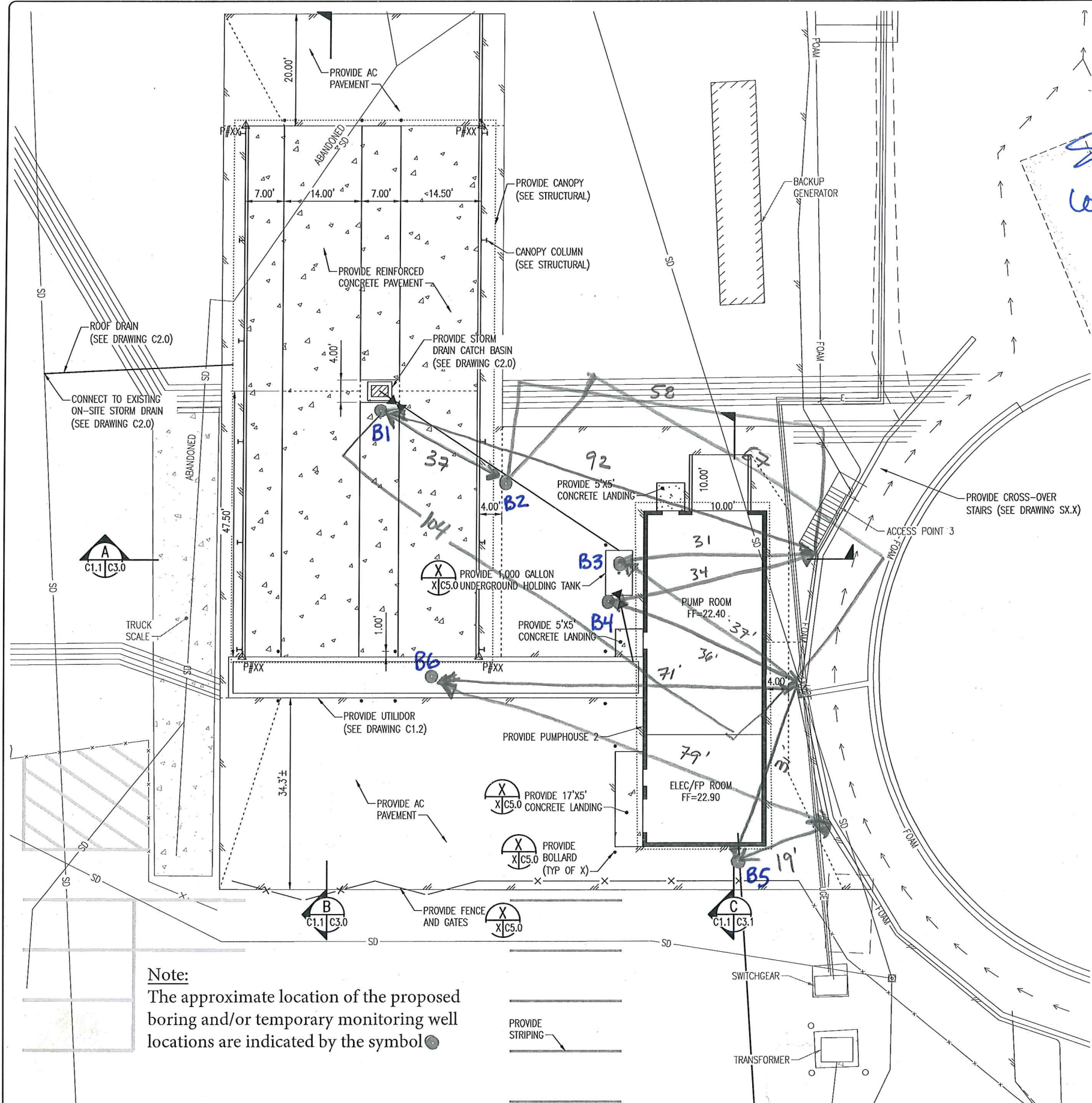
Important telephone calls:

Personnel on site:

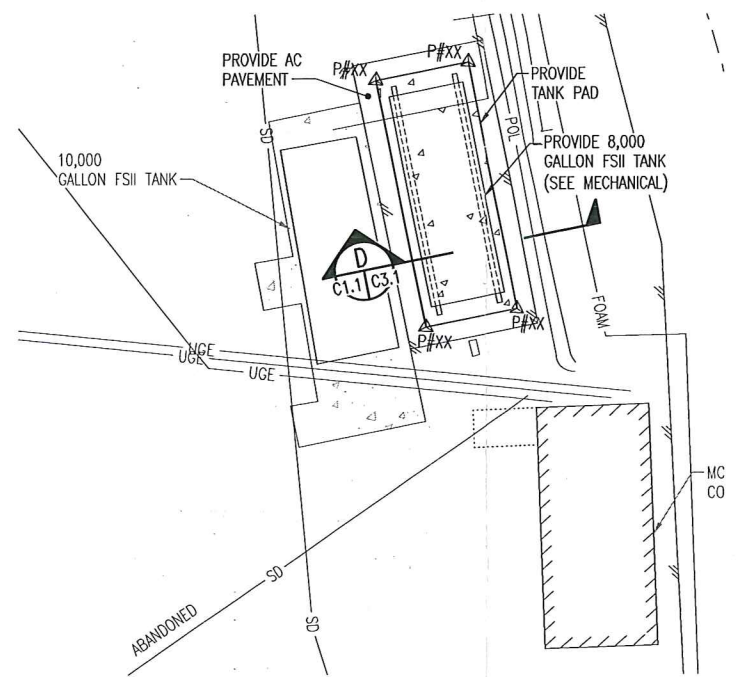
Signature:

Date:

Plot Date: Mar 28, 2017 - 3:12pm Drawing File: P:\projects\8921\Cad\Current\Drawings\C11_EC.dwg Last modified by: jparsons



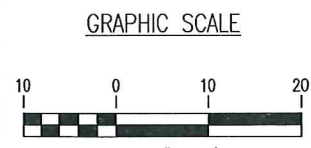
Spring ties to Boring
 locations -
 TWC
 5/17/17



N
 FSII TANK PLAN
 SCALE: 1" = 10'

Note:
 The approximate location of the proposed boring and/or temporary monitoring well locations are indicated by the symbol ●

N
 TRUCK RACK AND PUMPHOUSE PLAN
 SCALE: 1" = 10'



CROWLEY FUELS LLC
TANK TRUCK LOADING FACILITY
 459 W. BLUFF DRIVE
 ANCHORAGE, ALASKA 99501

REV	DATE	DESCRIPTION

DESIGN: RPP	SEAL
DRAWN: RPP	
CHKD: CAB	
APRVD: JFK	
SCALE:	

PROGRESS

ENTERPRISE
ENGINEERING, INC.
 400 US ROUTE 1 NORTH SUITE B FALMOUTH, ME 041015 TEL: (207) 869-8006 FAX: (207) 869-8015
 2525 GAMBELL STREET SUITE 200 ANCHORAGE, AK 99503 TEL: (907) 563-3835 FAX: (907) 563-3817

DRAWING TITLE		
TRUCK RACK AND PUMPHOUSE PLAN		
DWG NO.	DATE	
C1.1	03/28/17	
PN:	GRID:	SHEET
8921	SM1030/1130	X OF X

DRILL COMPANY/DRILLER: <u>Discovery Drilling DJ Laary</u> DRILL RIG EQUIPMENT: <u>QHOPE 7522DT</u> DRILLING METHOD: <u>Direct Push</u> HAMMER TYPE: _____ ROD TYPE/DIA.: _____ HAMMER WEIGHT: _____ HAMMER DROP: _____ CASING SIZE/TYPER: _____ HOLE SIZE: _____	JOB NO: <u>32-1-17863</u> BORING NO: <u>B-1</u> JOB NAME: <u>459 Bluff Road</u> LOGGED BY: <u>Trevor Crosby</u> LOCATION: <u>Cravley Facility</u> ELEV.: _____ START DATE: <u>5/17/17</u> END DATE: <u>5/17/17</u> WEATHER DURING DRILLING: <u>50°F; overcast</u>
---	--

SAMPLE DATA										
TIME	SAMP. NO.	DEPTH	FROM	DRIVING RESISTANCE	L. REC.	DRILL	CONTACTS /	PID	CONST.	FIELD IDENTIFICATION
DATE	TYPE	TO	TO	BLOWS / 6 INCH	Env. Sample (Y/N)	ACTION	GROUNDWATER		%	(Density/consistency, color, Group Name (USCS); moisture; constituent properties (particle size, plasticity, etc.); organics; structure; other; unit name)
1145	-	0			-		Asphalt Surface		G -	Asphalt surface 0.3 foot
5/17	-	0.3			-				S -	
									F -	
1203	S1	0.3			2.2			843	G -	Brown; Poorly graded SAND w/ gravel (SP); moist; hydrocarbon odor
5/17	MC	5.3			Y				S -	
									F -	
1206	S2	5.3			2.4		5.8'-6.8'	417	G -	Gray, Poorly graded GRAVEL w/ sand (GP); moist; hydrocarbon odor.
5/17	MC	10.3			Y				S -	
									F -	net @ 5.8'-6.8'
									G	
									S	
									F	END of Boring @ 10.3 bgs
									G	
									S	
									F	
									G	
									S	
									F	
									G	
									S	
									F	

SUMMARY FIELD LOG OF BORING			
DEPTH		USCS CLASSIF.	GENERALIZED SOIL DESCRIPTION FOR DRAFTED GINT LOG
FROM	TO		

COMMENTS (i.e. materials used, visitors, problems, etc.):
* Not enough recovery for duplicate samples

GROUNDWATER DATA		
WATER DEPTH	TIME	DATE

SUMMARY OF TIME AND FOOTAGE

FOOTAGE 10.3 SAMPLES: 2 Attempted
 DRILLED: 2 Recovered

DRILL/SAMPLE ✓ hrs. STANDBY: — hrs.
 SETUP/CLEANUP: ✓ hrs. WELL INSTALL: — hrs.

OTHER: _____

BORING: B-1 SHEET 1 OF 1

DRILL COMPANY/DRILLER: <u>Discovery Drilling</u> <u>DJ/Gary</u>	JOB NO: <u>32-1-17863</u>	BORING NO: <u>B-2</u>
DRILL RIG EQUIPMENT: <u>GEOPROBE 7322H</u>	JOB NAME: <u>459 Bluff Road</u>	
DRILLING METHOD: <u>Direct Push</u>	LOGGED BY: <u>Trevor Crosby</u>	
HAMMER TYPE: <u>-</u> ROD TYPE/DIA.: <u>-</u>	LOCATION: <u>Crowley facility</u> ELEV.: <u>-</u>	
HAMMER WEIGHT: <u>-</u> HAMMER DROP: <u>-</u>	START DATE: <u>5/12/12</u> END DATE: <u>5/12/12</u>	
CASING SIZE/TYPER: <u>-</u> HOLE SIZE: <u>-</u>	WEATHER DURING DRILLING: <u>50°F overcast</u>	

SAMPLE DATA

TIME	SAMP. NO.	DEPTH	FROM TO	DRIVING RESISTANCE BLOWS / 6 INCH	L. REC. Env. Sample (Y/N)	DRILL ACTION	CONTACTS / GROUNDWATER	PID	CONST. %	FIELD IDENTIFICATION (Density/consistency, color, Group Name (USCS); moisture; constituent properties (particle size, plasticity, etc.); organics; structure; other; unit name)
1135	-	0			-		Asphalt surface		-	Asphalt Surface - 0.3-foot
5/12	-	0.3			-				-	
1137	S1	0.3			2.4			817	-	Brown; poorly graded GRAVEL w/ SAND(GP); moist; hydrocarbon odor
5/12	MC	5.3			Y				-	Fractured rock/ rubble ~ 3.0"-4.0' bgs
1144	S2	5.3			2.2		6.5-7.5' 591		-	gray; poorly graded SAND w/ GRAVEL(SP) moist; hydrocarbon odor
5/12	MC	10.3			Y				-	wat @ 6.5-7.5' bgs.
									G	
									S	END OF Boring @ 10.3' bgs
									F	
									G	
									S	
									F	
									G	
									S	
									F	

SUMMARY FIELD LOG OF BORING

DEPTH		USCS CLASSIF.	GENERALIZED SOIL DESCRIPTION FOR DRAFTED GINT LOG
FROM	TO		

COMMENTS (i.e. materials used, visitors, problems, etc.):
 * Not enough recovery for duplicate sample

GROUNDWATER DATA

WATER DEPTH	TIME	DATE

SUMMARY OF TIME AND FOOTAGE

FOOTAGE 10.3 SAMPLES: 2 Attempted
 DRILLED: 2 Recovered

DRILL/SAMPLE hrs. STANDBY: hrs.
 SETUP/CLEANUP: hrs. WELL INSTALL: hrs.

OTHER:

FIELD LOG OF BORING

DRILL COMPANY/DRILLER: <u>Discovery Drilling D3/CARR</u>	JOB NO: <u>32-1-17863</u>	BORING NO: <u>B-3</u>
DRILL RIG EQUIPMENT: <u>ALD PROBE 7822 DR</u>	JOB NAME: <u>459 Bluff Road</u>	
DRILLING METHOD: <u>Direct Push</u>	LOGGED BY: <u>Trevor Crosby</u>	
HAMMER TYPE: <u>Direct Push</u> ROD TYPE/DIA.: _____	LOCATION: <u>CROWLEY FACILITY</u> ELEV.: <u>-</u>	
HAMMER WEIGHT: <u>-</u> HAMMER DROP: <u>-</u>	START DATE: <u>5/12/17</u> END DATE: <u>5/12/17</u>	
CASING SIZE/TYPE: _____ HOLE SIZE: _____	WEATHER DURING DRILLING: <u>50°F, overcast</u>	

SAMPLE DATA										
TIME	SAMP. NO.	FROM	DRIVING RESISTANCE	L. REC.	DRILL ACTION	CONTACTS / GROUNDWATER	PID	CONST. %	FIELD IDENTIFICATION	
DATE	TYPE	DEPTH TO	BLOWS / 6 INCH	Env. Sample (Y/N)					[Density/consistency, color, Group Name (USCS); moisture; constituent properties (particle size, plasticity, etc.); organics; structure; other; unit name]	
10/15	-	0		-		CONCRETE		G S	CONCRETE SURFACE - 6.65-foot core.	
5/17	-	0.65		N				F		
11/01	(S1)	0.65		2.1			7HG	G S	Brown; Poorly graded GRAVEL w/ SAND (GP) moist; hydrocarbon odor.	
5/17	MC	5.65		Y				F		
11/07	S2	5.65		26		6.5-7.5'	4HG	G S	GRAY; Poorly graded GRAVEL w/ SAND (GP) moist; hydrocarbon odor; wet @ ~6.5'-7.5' bgs	
5/17	MC	10.65		Y				F	10-10.65 - Brown PEAT (AP). END OF BORING @ 10.65	
								G		
								S		
								F		
								G		
								S		
								F		
								G		
								S		
								F		
								G		
								S		
								F		

SUMMARY FIELD LOG OF BORING		
DEPTH FROM	DEPTH TO	USCS CLASSIF.

COMMENTS (i.e. materials used, visitors, problems, etc.):
* NOT enough recovery for duplicate sample

WATER DEPTH	TIME	DATE

FOOTAGE DRILLED:	<u>10.65</u>	SAMPLES:	<u>2</u>	Attempted
			<u>2</u>	Recovered
DRILL/SAMPLE	___ hrs.	STANDBY:	___ hrs.	
SETUP/CLEANUP:	___ hrs.	WELL INSTALL:	___ hrs.	
OTHER: _____				
BORING: <u>B-3</u> SHEET <u>1</u> OF <u>1</u>				

DRILL COMPANY/DRILLER: Discovery Drilling *DJ/AMM*

DRILL RIG EQUIPMENT: ALPACABE 7822 DT

DRILLING METHOD: Direct Push

HAMMER TYPE: DIRECT PUSH ROD TYPE/DIA.: -

HAMMER WEIGHT: - HAMMER DROP: -

CASING SIZE/TYPE: - HOLE SIZE: -

JOB NO: 32-1-17863 BORING NO: B-4

JOB NAME: 459 Bluff Road

LOGGED BY: Trevor Crosby

LOCATION: CROWLEY FACILITY ELEV.: -

START DATE: 5/12/17 END DATE: -

WEATHER DURING DRILLING: SOFT; OVERCAST

SAMPLE DATA										
TIME	SAMP. NO.	DEPTH	FROM	DRIVING RESISTANCE	L. REC.	DRILL ACTION	CONTACTS / GROUNDWATER	PID	CONST. %	FIELD IDENTIFICATION
DATE	TYPE	TO	TO	BLOWS / 6 INCH	Env. Sample (Y/N)					[Density/consistency, color, Group Name (USCS); moisture; constituent properties (particle size, plasticity, etc.); organics; structure; other; unit name]
0948	-	0		-	-	Started screen.	CONCRETE		G	CONCRETE SURFACE - 0.65 foot core
5/17	-	0.65		-	N				S	
1037	(S1)	0.65		-	2.2				G	Brown, Poorly graded SAND w/ gravel (SP). moist; hydrocarbon odor.
5/17	MC	5.65		-	Y				S	
1043	S2	5.65		-	2.8				F	
5/17	MC	10.65		-	Y				G	Brown to gray; Poorly graded GRAVEL w/ Sand (GP); moist wet 0 ~ 7.5'-8' bgs <i>*Duplicate S3</i> 10-10.65' Brown PEAT (PT)
							7.5'-8'		S	END of BORING @ 10.65' SET TEMPORARY WELL
									F	
									G	collected water sample - G-4 @ 1325
									S	
									F	
									G	
									S	
									F	
									G	
									S	
									F	

SUMMARY FIELD LOG OF BORING			
DEPTH		USCS CLASSIF.	GENERALIZED SOIL DESCRIPTION FOR DRAFTED GINT LOG
FROM	TO		

COMMENTS (i.e. materials used, visitors, problems, etc.):
** Duplicate Sample S3 - recovery limited. OKAY - sample.*

GROUNDWATER DATA		
WATER DEPTH	TIME	DATE
3.9	1310	5/12/17

SUMMARY OF TIME AND FOOTAGE

FOOTAGE 10.65 SAMPLES: 2 Attempted
 DRILLED: _____ Recovered

DRILL/SAMPLE - hrs. STANDBY: - hrs.

SETUP/CLEANUP: - hrs. WELL INSTALL: - hrs.

OTHER: _____

Field Log of Boring Updated Nov 2015

FIELD LOG OF BORING

DRILL COMPANY/DRILLER: <u>Discovery Drilling DS / GAEY.</u> DRILL RIG EQUIPMENT: <u>GEO PROBE 7822 DT.</u> DRILLING METHOD: <u>Direct Push</u> HAMMER TYPE: <u>Direct Push</u> ROD TYPE/DIA.: _____ HAMMER WEIGHT: _____ HAMMER DROP: _____ CASING SIZE/TYPE: _____ HOLE SIZE: _____	JOB NO: <u>32-1-17863</u> BORING NO: <u>B-5</u> JOB NAME: <u>459 Bluff Road</u> LOGGED BY: <u>Trevor Crosby</u> LOCATION: <u>CROWLEY FACILITY</u> ELEV.: <u>-</u> START DATE: <u>5/17/12</u> END DATE: <u>5/17/12</u> WEATHER DURING DRILLING: <u>48°F; OVERCAST</u>
---	---

SAMPLE DATA

TIME DATE	SAMP. NO. TYPE	DEPTH FROM TO	DRIVING RESISTANCE BLOWS / 6 INCH	L. REC. Env. Sample (Y/N)	TEMP DRILL ACTION WELL	CONTACTS / GROUNDWATER	PID	CONST. %	FIELD IDENTIFICATION	
									(Density/consistency, color, Group Name (USCS); moisture; constituent properties (particle size, plasticity, etc.); organics; structure; other; unit name)	
900	-	0	-	-	SLOTTED CASE - 2" ID	Concrete			CONCRETE SURFACE - 6-inch core.	
5/17	-	0.5	-	N						
928	(S1)	0.5	-	2.6		Concrete Slab 2.2'-3.4'	595			Brown, Poorly graded GRAVEL w/ sand (GP); moist; hydrocarbon odor* 1.2-foot = concrete @ 2.2'-3.4' bgs.
5/17	MC	5.5	-	Y						
937:	S2	5.5	-	2.6			484			Brown to gray; Poorly graded GRAVEL w/ sand (GP); moist to wet; wet @ 2.8-8.5' *hydrocarbon odor
5/17	MC	10.5	-	Y						9.5-10.5 = dark brown; PRAT (PT)
1002	-	10.5	-	3.6						gray; Poorly graded SAND w/ gravel (SP); wet; hydrocarbon odor.
5/17	MC	15.5	-	N						14.5-15.5' - gray, clay (CL).
										END OF BORING @ 15.5' SET TEMPORARY WELL.
										collected water samples. B05 - @ 1250 G15 - @ 1300 - duplicate sample.

SUMMARY FIELD LOG OF BORING

DEPTH		USCS CLASSIF.	GENERALIZED SOIL DESCRIPTION FOR DRAFTED GINT LOG
FROM	TO		

COMMENTS (i.e. materials used, visitors, problems, etc.):
 Concrete core - 0.5-foot.
 NOT ENOUGH RECOVERY FOR DUPLICATE SAMPLES.

GROUNDWATER DATA

WATER DEPTH	TIME	DATE
3.9 bgs	1237	5/17/12

SUMMARY OF TIME AND FOOTAGE

FOOTAGE 15.5' SAMPLES: 2 Attempted
 DRILLED: _____ 2 Recovered
 DRILL/SAMPLE _____ hrs. STANDBY: _____ hrs.
 SETUP/CLEANUP: _____ hrs. WELL INSTALL: _____ hrs.
 OTHER: INSTALLED TEMP. WELL.

BORING: B5 SHEET 1 OF 1

DRILL COMPANY/DRILLER: Discovery Drilling DL/GARY
 DRILL RIG EQUIPMENT: 950 PROBE 7822 DR
 DRILLING METHOD: Direct Push
 HAMMER TYPE: Direct Push ROD TYPE/DIA.:
 HAMMER WEIGHT: HAMMER DROP:
 CASING SIZE/TYPE: HOLE SIZE:

JOB NO: 32-1-17863 BORING NO: B-6
 JOB NAME: 459 Bluff Road
 LOGGED BY: Trevor Crosby
 LOCATION: CROWLEY FACILITY ELEV.:
 START DATE: 5/17/17 END DATE:
 WEATHER DURING DRILLING: 50°F) OVERCAST

SAMPLE DATA

TIME	SAMP. NO.	DEPTH	FROM	DRIVING RESISTANCE BLOWS / 6 INCH	L. REC. Env. Sample (Y/N)	DRILL ACTION	CONTACTS / GROUNDWATER	PID	CONST. %	FIELD IDENTIFICATION [Density/consistency, color, Group Name (USCS); moisture; constituent properties (particle size, plasticity, etc.); organics; structure; other; unit name]
DATE	TYPE	DEPTH	TO							
1025	-	0					CONCRETE		G -	CONCRETE SURFACE - 0.65' foot core
517	-	0.65			N				S -	
									F -	
1120	(S1)	0.65			2.4			914	G -	Brown; Poorly graded SAND w/ gravel (SP); moist; hydrocarbon odor
517	MC	5.65			Y				S -	
									F -	
136	S2	5.65			2.4			702	G -	Gray; Poorly graded GRAVEL w/ sand (GP); moist; hydrocarbon odor
517	MC	10.65			Y		6.5-7.0' bgs		S -	wet @ 6.5-7.0' bgs
									F -	
									G	
									S	END of Boring @ 10.65' bgs
									F	
									G	
									S	
									F	
									G	
									S	
									F	
									G	
									S	
									F	

SUMMARY FIELD LOG OF BORING

DEPTH		USCS CLASSIF.	GENERALIZED SOIL DESCRIPTION FOR DRAFTED GINT LOG
FROM	TO		

COMMENTS (i.e. materials used, visitors, problems, etc.):
* Not enough recovery for duplicate sample

GROUNDWATER DATA

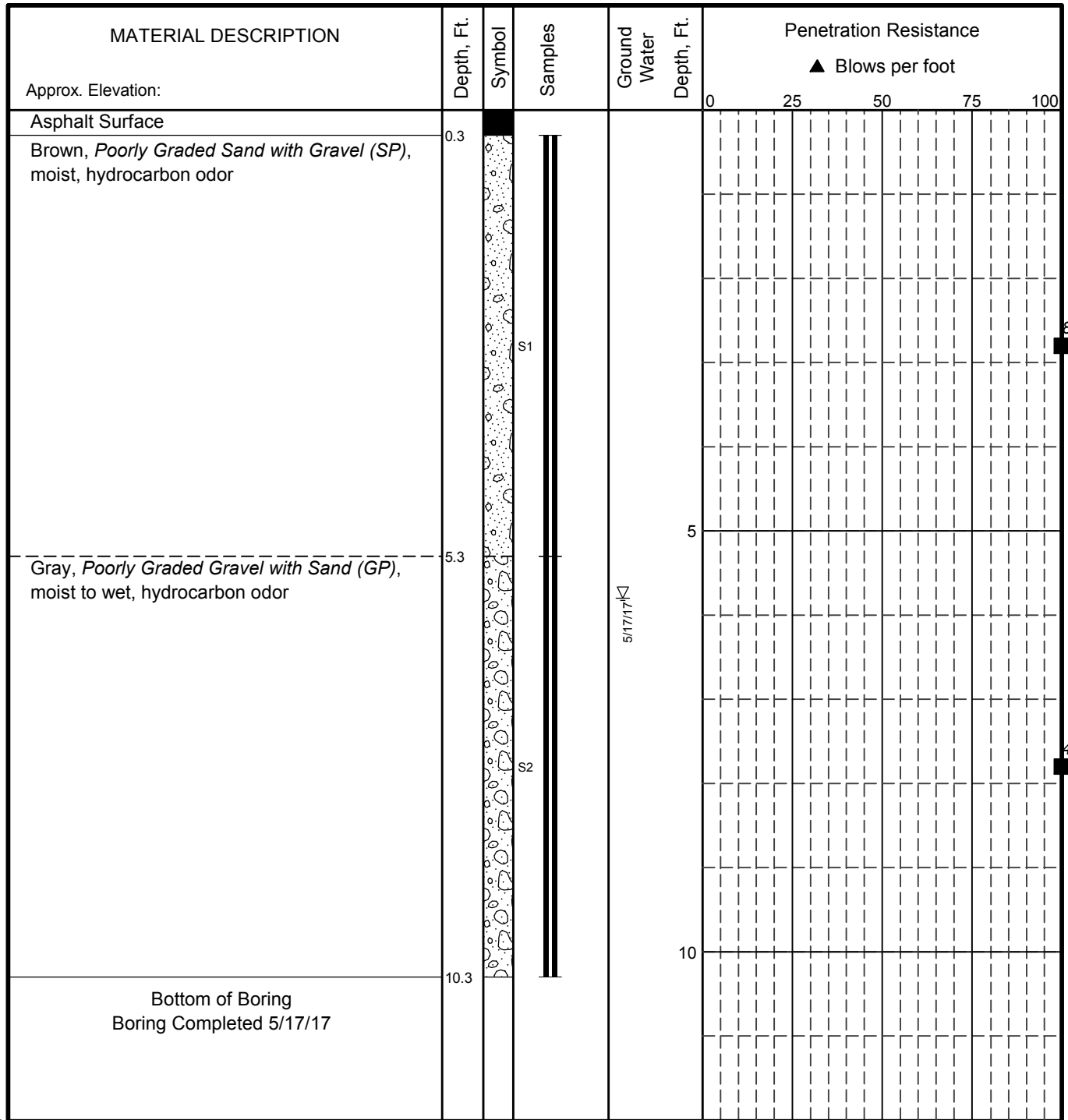
WATER DEPTH	TIME	DATE

SUMMARY OF TIME AND FOOTAGE

FOOTAGE 10.65 SAMPLES: 2 Attempted
 DRILLED: 2 Recovered
 DRILL/SAMPLE hrs. STANDBY: hrs.
 SETUP/CLEANUP: hrs. WELL INSTALL: hrs.
 OTHER:

APPENDIX C

BORING LOG AND MONITORING WELL CONSTRUCTION DETAILS



843

417

LEGEND

* Sample not recovered
 II Direct Push

∇ Ground Water Level At Time Of Drilling

■ PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

459 Bluff Road
Anchorage, AK

LOG OF BORING B-1

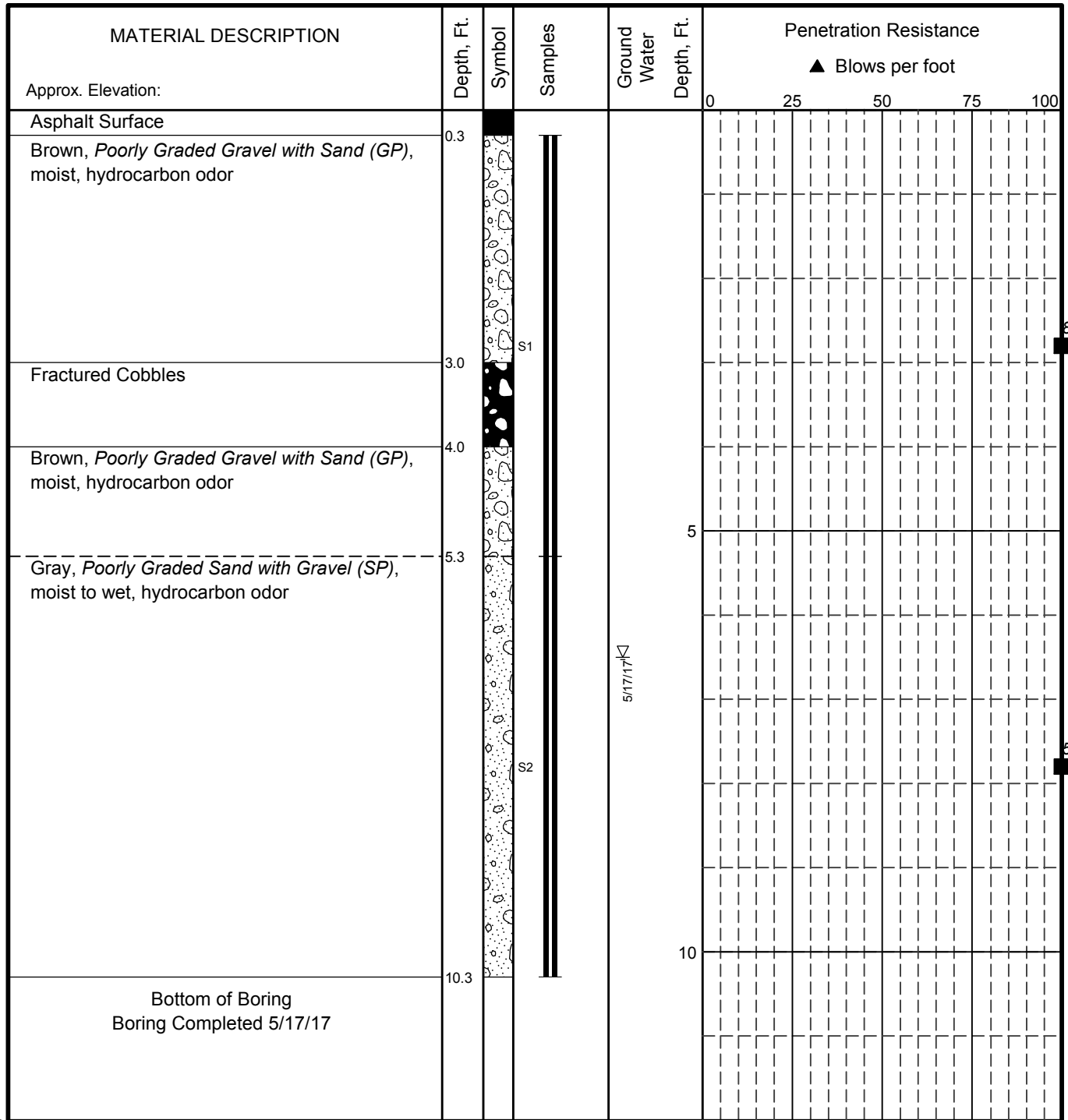
June 2017

32-1-17863

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. C-1

ENVIRONMENTAL LOG 17863 LOGS.GPJ S&W GEO1.GDT 6/9/17



LEGEND

- * Sample not recovered
- II Direct Push
- ∇ Ground Water Level At Time Of Drilling
- PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

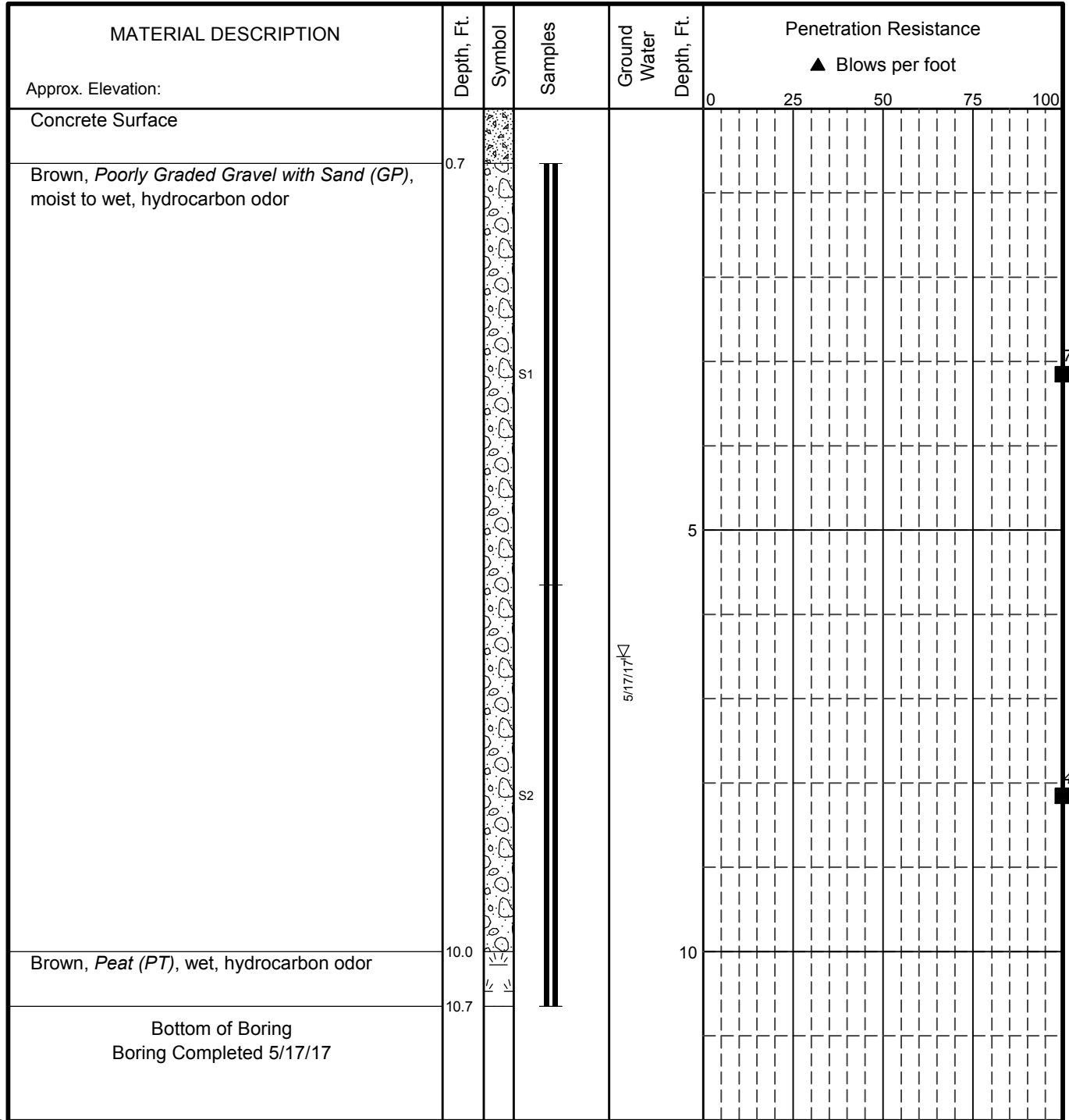
459 Bluff Road
Anchorage, AK

LOG OF BORING B-2

June 2017
32-1-17863

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants
FIG. C-2

ENVIRONMENTAL LOG 17863 LOGS.GPJ S&W GEO1.GDT 6/9/17



LEGEND

- * Sample not recovered
- II Direct Push
- ∇ Ground Water Level At Time Of Drilling
- PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

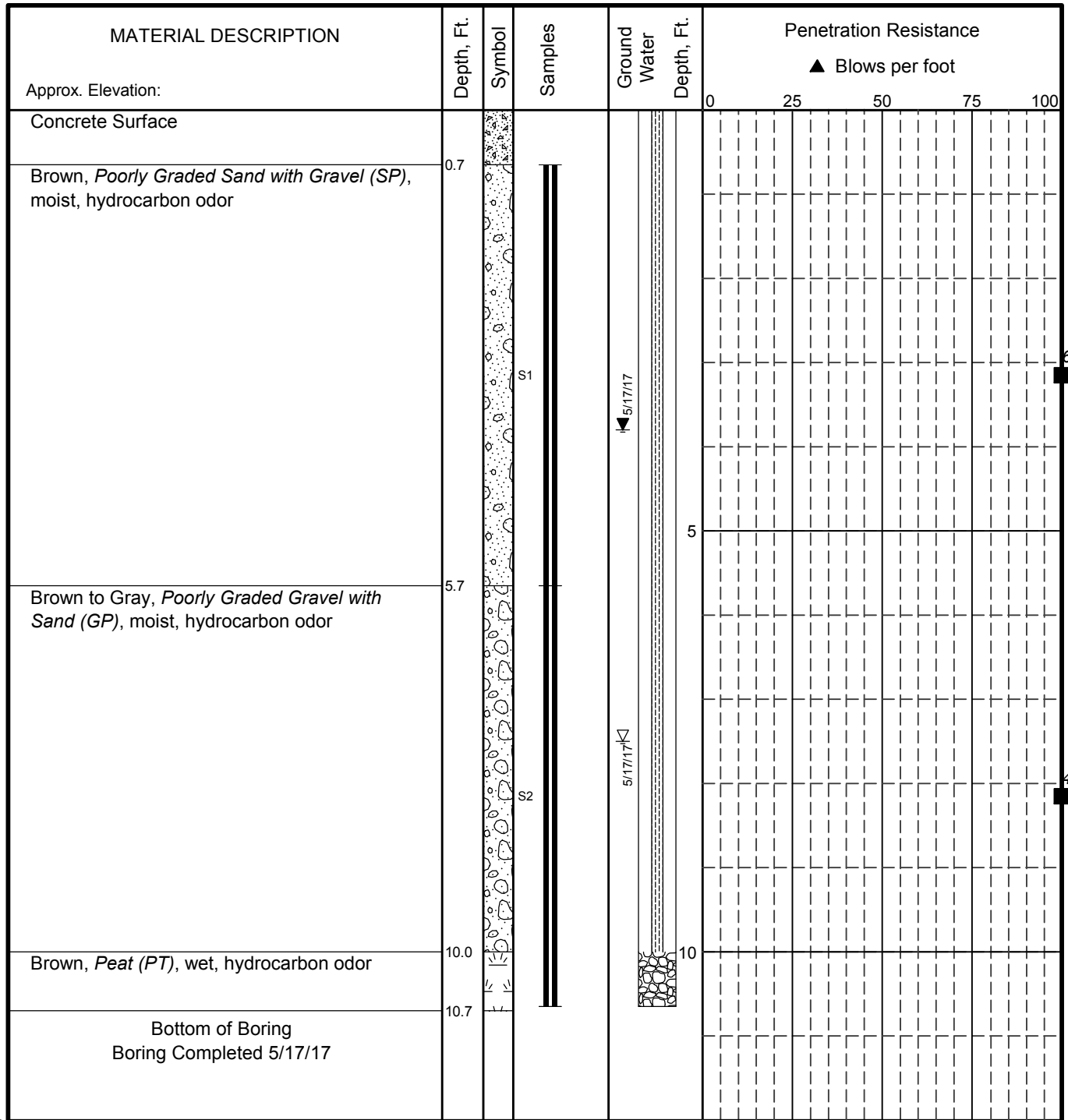
459 Bluff Road
Anchorage, AK

LOG OF BORING B-3

June 2017
32-1-17863

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants
FIG. C-3

ENVIRONMENTAL LOG 17863 LOGS.GPJ S&W GEO1.GDT 6/9/17



621

488

LEGEND

- * Sample not recovered
- II Direct Push
- ▽ Ground Water Level At Time Of Drilling
- ▼ Static Water Level
- PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

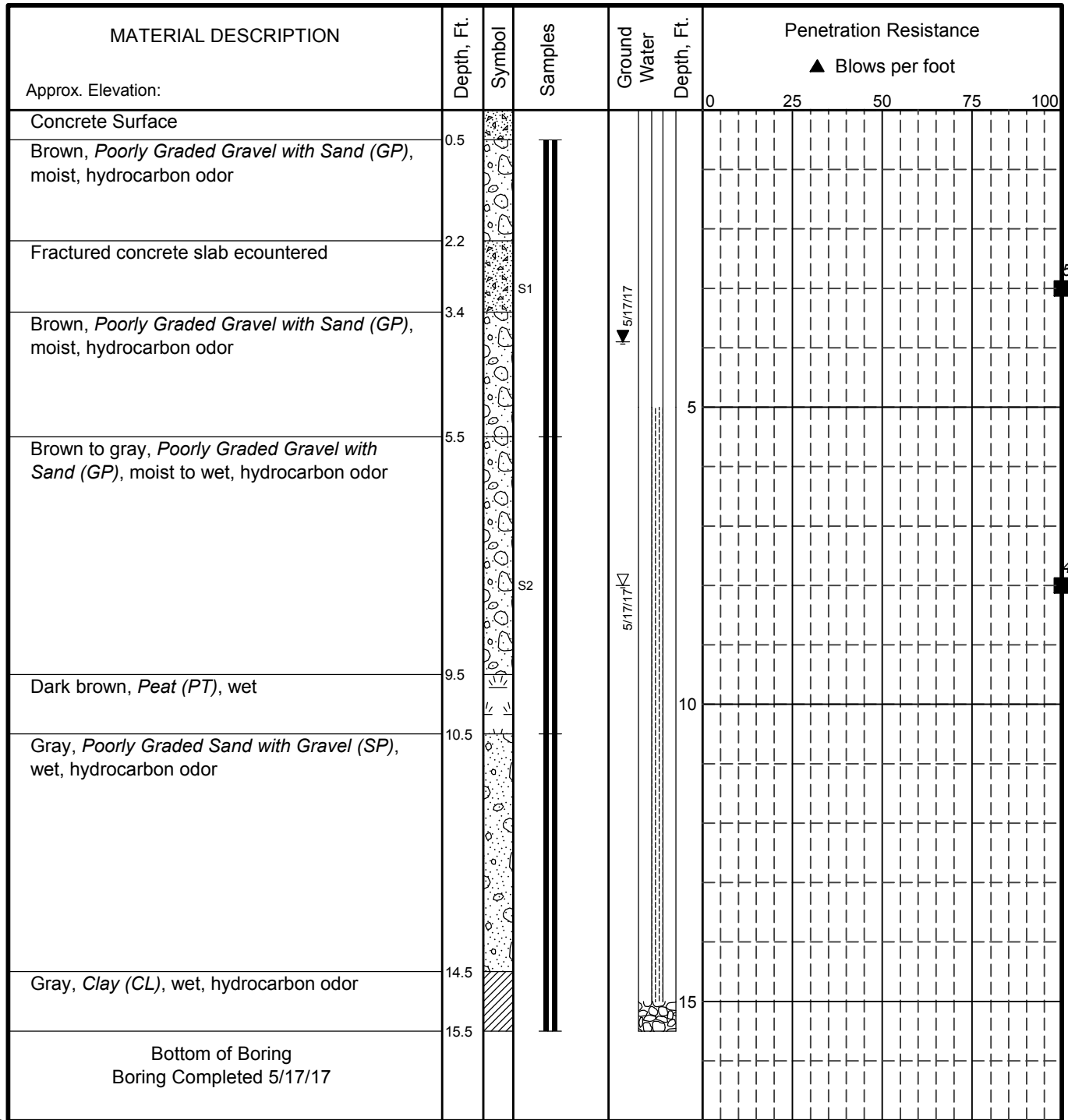
459 Bluff Road
Anchorage, AK

LOG OF BORING B-4

June 2017
32-1-17863

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants
 FIG. C-4

ENVIRONMENTAL LOG 17863 LOGS.GPJ S&W GEO1.GDT 6/9/17



ENVIRONMENTAL LOG - 17863 LOGS.GPJ S&W GEO1.GDT 6/9/17

LEGEND

- * Sample not recovered
- II Direct Push
- ▽ Ground Water Level At Time Of Drilling
- ▼ Static Water Level
- PID Reading (ppm)

NOTES

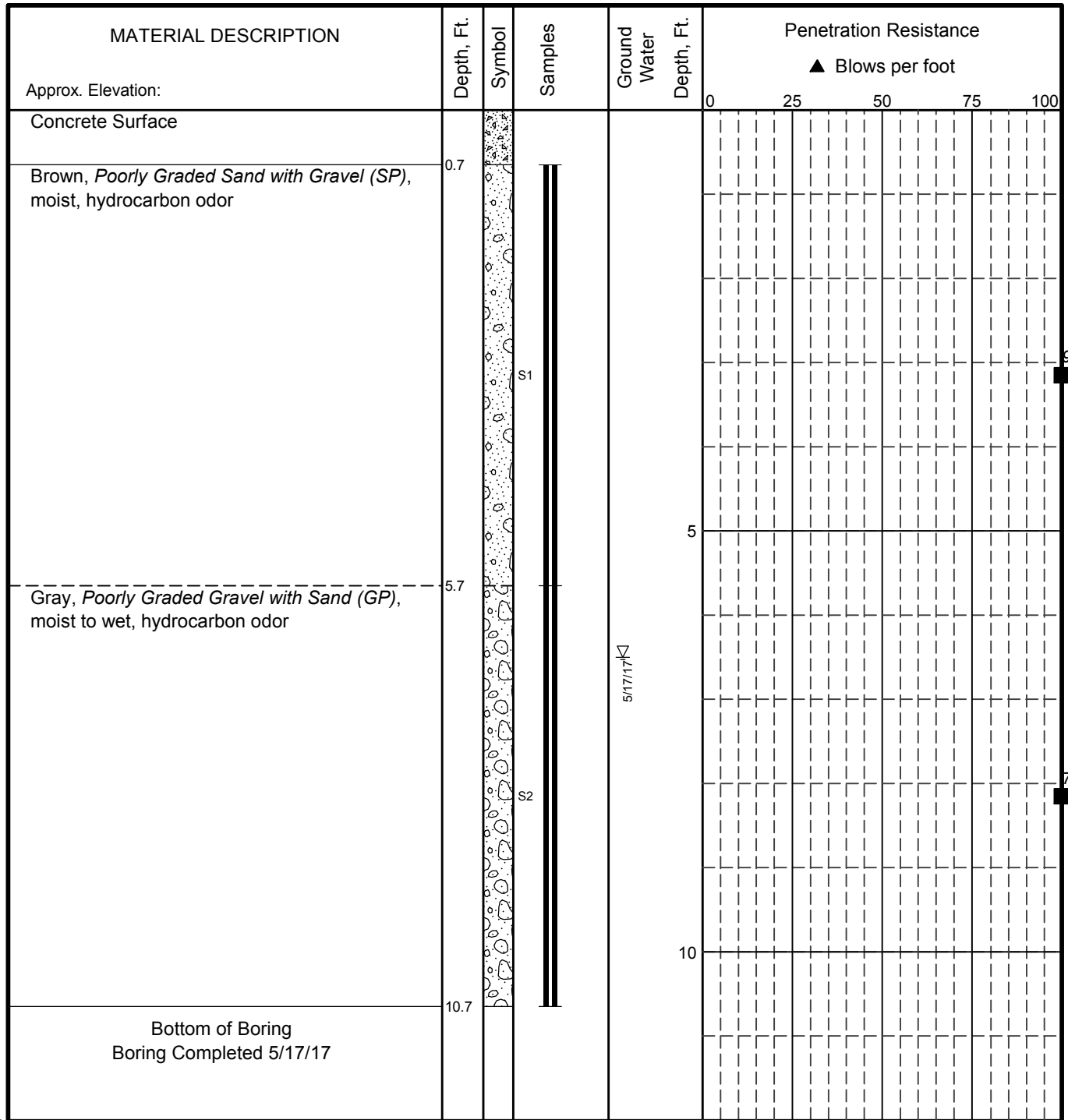
1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

459 Bluff Road
Anchorage, AK

LOG OF BORING B-5

June 2017
32-1-17863

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants
FIG. C-5



914

702

LEGEND

* Sample not recovered
 Direct Push

Ground Water Level At Time Of Drilling

PID Reading (ppm)

NOTES

- The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
- The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
- Water level, if indicated above, is for the date specified and may vary.
- USC letter symbol based on visual classification.

459 Bluff Road
Anchorage, AK

LOG OF BORING B-6

June 2017 32-1-17863

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. C-6

ENVIRONMENTAL LOG 17863 LOGS.GPJ S&W GEO1.GDT 6/9/17

APPENDIX D

RESULTS OF ANALYTICAL TESTING BY SGS NORTH AMERICA INC. OF

ANCHORAGE, ALASKA AND

ADEC LABORATORY DATA REVIEW CHECKLISTS

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks Street Suite 3
Anchorage, AK 99518
(907)433-3246

Report Number: **1172456**

Client Project: **32-1-17863 459 Bluff Road**

Dear Trevor Crosby,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Victoria at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



SGS North America Inc.
Environmental Services – Alaska Division
Project Manager

Victoria Pennick

2017.05.26

16:46:48 -08'00'

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
 SGS Project: **1172456**
 Project Name/Site: **32-1-17863 459 Bluff Road**
 Project Contact: **Trevor Crosby**

Refer to sample receipt form for information on sample condition.

17863-B1S1 (1172456001) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (204%) does not meet QC criteria due to matrix interference.
 AK101 - Surrogate recovery for 4-bromofluorobenzene (2180%) does not meet QC criteria due to matrix interference.

17863-B2S1 (1172456002) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (204%) does not meet QC criteria due to matrix interference.
 AK101 - Surrogate recovery for 4-bromofluorobenzene (170%) does not meet QC criteria due to matrix interference.

17863-B3S1 (1172456003) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (361%) does not meet QC criteria due to matrix interference.
 AK101 - Surrogate recovery for 4-bromofluorobenzene (983%) does not meet QC criteria due to matrix interference.

17863-B4S1 (1172456004) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (312%) does not meet QC criteria due to matrix interference.
 AK101 - Surrogate recovery for 4-bromofluorobenzene (F300%) does not meet QC criteria due to matrix interference.

17863-B5S1 (1172456005) PS

AK102/103 - Surrogate recoveries for 5a-androstane (0%) and n-triacontane (0%) do not meet QC criteria due to dilution (4X).
 8260C - Surrogate recovery for 4-bromofluorobenzene (257%) does not meet QC criteria due to matrix interference.
 AK101 - Surrogate recovery for 4-bromofluorobenzene (846%) does not meet QC criteria due to matrix interference.

17863-B6S1 (1172456006) PS

AK103 - Surrogate recovery for n-triacontane (0%) does not meet QC criteria due to sample dilution (4X).
 8260C - Surrogate recovery for 4-bromofluorobenzene (274%) does not meet QC criteria due to matrix interference.
 AK101 - Surrogate recovery for 4-bromofluorobenzene (680%) does not meet QC criteria due to matrix interference.
 AK102 - Surrogate recovery for 5a-androstane (0%) does not meet QC criteria due to sample dilution (40X).

LCS for HBN 1759352 [VXX/30525 (1385685) LCS

8260C - LCS recovery for several analytes do not meet QC criteria. These analytes were not above the LOQ in the associated samples.

1172456006MS (1385489) MS

8270D SIM - PAH MS recovery for several analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.

1177779009(1385880MS) (1385725) MS

8260C - MS recovery for several analytes do not meet QC criteria. These analytes were not in the parent sample.

1172574002MS (1386636) MS

8260C - MS recovery for several analytes do not meet QC criteria. See LCS for accuracy requirements.

1172456006MSD (1385490) MSD

8270D SIM - PAH MSD recovery for several analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.

1177779009(1385880MSD) (1385726) MSD

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1172456**
Project Name/Site: **32-1-17863 459 Bluff Road**
Project Contact: **Trevor Crosby**

8260C - MS/MSD RPD for several analytes do not meet QC criteria. These analytes were not detected in the parent sample.

1172574002MSD (1386637) MSD

8260C - MSD recoveries for several analytes do not meet QC criteria. See LCS for accuracy.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 05/26/2017 4:27:35PM

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
8270D SIM (PAH)				
1172456006	17863-B6S1	XMS10043	Benzo[k]fluoranthene	RP
1385489	1172456006MS	XMS10043	Benzo[k]fluoranthene	RP
1385490	1172456006MSD	XMS10043	Benzo[k]fluoranthene	RP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 05/26/2017 4:27:36PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) for which SGS North America Inc. is Provisionally Certified as of 2/8/2017 & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
17863-B1S1	1172456001	05/17/2017	05/17/2017	Soil/Solid (dry weight)
17863-B2S1	1172456002	05/17/2017	05/17/2017	Soil/Solid (dry weight)
17863-B3S1	1172456003	05/17/2017	05/17/2017	Soil/Solid (dry weight)
17863-B4S1	1172456004	05/17/2017	05/17/2017	Soil/Solid (dry weight)
17863-B5S1	1172456005	05/17/2017	05/17/2017	Soil/Solid (dry weight)
17863-B6S1	1172456006	05/17/2017	05/17/2017	Soil/Solid (dry weight)
17863-STB	1172456007	05/17/2017	05/17/2017	Soil/Solid (dry weight)
17863-B1S1	1172456008	05/17/2017	05/17/2017	Solid/Soil (Wet Weight)
17863-B2S1	1172456009	05/17/2017	05/17/2017	Solid/Soil (Wet Weight)
17863-B3S1	1172456010	05/17/2017	05/17/2017	Solid/Soil (Wet Weight)
17863-B4S1	1172456011	05/17/2017	05/17/2017	Solid/Soil (Wet Weight)
17863-B5S1	1172456012	05/17/2017	05/17/2017	Solid/Soil (Wet Weight)
17863-B6S1	1172456013	05/17/2017	05/17/2017	Solid/Soil (Wet Weight)

Method

8270D SIM (PAH)
 AK102
 AK103
 AK101
 SM21 2540G
 SW8260C TCLP
 SW8260C

Method Description

8270 PAH SIM Semi-Volatiles GC/MS
 Diesel/Residual Range Organics
 Diesel/Residual Range Organics
 Gasoline Range Organics (S)
 Percent Solids SM2540G
 TCLP Volatile Organic Compounds 8260
 VOC 8260 (S) Field Extracted

Detectable Results Summary

Client Sample ID: **17863-B1S1**

Lab Sample ID: 1172456001

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	851	mg/Kg
Residual Range Organics	754	mg/Kg
Gasoline Range Organics	608	mg/Kg
1,2,4-Trimethylbenzene	153000	ug/Kg
1,3,5-Trimethylbenzene	48900	ug/Kg
4-Isopropyltoluene	4230	ug/Kg
Benzene	1250	ug/Kg
Ethylbenzene	9810	ug/Kg
Isopropylbenzene (Cumene)	3370	ug/Kg
Naphthalene	12900	ug/Kg
n-Propylbenzene	10200	ug/Kg
o-Xylene	16100	ug/Kg
P & M -Xylene	76600	ug/Kg
sec-Butylbenzene	1790	ug/Kg
tert-Butylbenzene	567	ug/Kg
Toluene	1630	ug/Kg
Xylenes (total)	92700	ug/Kg

Client Sample ID: **17863-B2S1**

Lab Sample ID: 1172456002

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	777	mg/Kg
Residual Range Organics	437	mg/Kg
Gasoline Range Organics	389	mg/Kg
1,2,4-Trimethylbenzene	67600	ug/Kg
1,3,5-Trimethylbenzene	20500	ug/Kg
4-Isopropyltoluene	1800	ug/Kg
Benzene	255	ug/Kg
Ethylbenzene	2640	ug/Kg
Isopropylbenzene (Cumene)	1400	ug/Kg
Naphthalene	5780	ug/Kg
n-Propylbenzene	3530	ug/Kg
o-Xylene	3600	ug/Kg
P & M -Xylene	29400	ug/Kg
sec-Butylbenzene	667	ug/Kg
tert-Butylbenzene	223	ug/Kg
Toluene	675	ug/Kg
Xylenes (total)	33000	ug/Kg

Print Date: 05/26/2017 4:27:40PM

Detectable Results Summary

Client Sample ID: **17863-B3S1**

Lab Sample ID: 1172456003

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	3230	mg/Kg
Residual Range Organics	152	mg/Kg
Gasoline Range Organics	649	mg/Kg
1,2,4-Trimethylbenzene	57900	ug/Kg
1,3,5-Trimethylbenzene	49900	ug/Kg
4-Isopropyltoluene	6000	ug/Kg
Benzene	245	ug/Kg
Ethylbenzene	480	ug/Kg
Isopropylbenzene (Cumene)	35.2J	ug/Kg
Naphthalene	11800	ug/Kg
n-Propylbenzene	53.6J	ug/Kg
o-Xylene	35200	ug/Kg
P & M -Xylene	59100	ug/Kg
sec-Butylbenzene	230	ug/Kg
tert-Butylbenzene	467	ug/Kg
Toluene	898	ug/Kg
Xylenes (total)	94300	ug/Kg

Client Sample ID: **17863-B4S1**

Lab Sample ID: 1172456004

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	2110	mg/Kg
Residual Range Organics	315	mg/Kg
Gasoline Range Organics	830	mg/Kg
1,2,4-Trimethylbenzene	83000	ug/Kg
1,3,5-Trimethylbenzene	78600	ug/Kg
4-Isopropyltoluene	8080	ug/Kg
Benzene	227	ug/Kg
Ethylbenzene	505	ug/Kg
Isopropylbenzene (Cumene)	123	ug/Kg
Naphthalene	28900	ug/Kg
n-Propylbenzene	184	ug/Kg
o-Xylene	41500	ug/Kg
P & M -Xylene	57900	ug/Kg
sec-Butylbenzene	575	ug/Kg
tert-Butylbenzene	728	ug/Kg
Toluene	1400	ug/Kg
Xylenes (total)	99400	ug/Kg

Print Date: 05/26/2017 4:27:40PM

Detectable Results Summary

Client Sample ID: **17863-B5S1**

Lab Sample ID: 1172456005

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	2360	mg/Kg
Residual Range Organics	205	mg/Kg
Gasoline Range Organics	489	mg/Kg
1,2,4-Trimethylbenzene	119000	ug/Kg
1,3,5-Trimethylbenzene	56600	ug/Kg
4-Isopropyltoluene	4130	ug/Kg
Benzene	73.0	ug/Kg
Ethylbenzene	45.4J	ug/Kg
Naphthalene	15000	ug/Kg
n-Propylbenzene	51.3J	ug/Kg
o-Xylene	11300	ug/Kg
P & M -Xylene	24100	ug/Kg
tert-Butylbenzene	432	ug/Kg
Toluene	218	ug/Kg
Xylenes (total)	35400	ug/Kg

Detectable Results Summary

Client Sample ID: **17863-B6S1**

Lab Sample ID: 1172456006

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	13800	ug/Kg
2-Methylnaphthalene	17400	ug/Kg
Acenaphthene	630	ug/Kg
Anthracene	197J	ug/Kg
Benzo(a)Anthracene	349J	ug/Kg
Benzo[b]Fluoranthene	296J	ug/Kg
Chrysene	499J	ug/Kg
Fluoranthene	888	ug/Kg
Fluorene	1410	ug/Kg
Naphthalene	12700	ug/Kg
Phenanthrene	2160	ug/Kg
Pyrene	867	ug/Kg

Semivolatile Organic Fuels

Diesel Range Organics	6060	mg/Kg
Residual Range Organics	174	mg/Kg

Volatile Fuels

Volatile GC/MS

Gasoline Range Organics	661	mg/Kg
1,2,4-Trimethylbenzene	115000	ug/Kg
1,3,5-Trimethylbenzene	50400	ug/Kg
4-Isopropyltoluene	4290	ug/Kg
Benzene	220	ug/Kg
Ethylbenzene	75.1J	ug/Kg
Isopropylbenzene (Cumene)	164	ug/Kg
Naphthalene	13900	ug/Kg
n-Propylbenzene	251	ug/Kg
o-Xylene	58000	ug/Kg
P & M -Xylene	55100	ug/Kg
sec-Butylbenzene	569	ug/Kg
tert-Butylbenzene	530	ug/Kg
Toluene	818	ug/Kg
Xylenes (total)	113000	ug/Kg

Client Sample ID: **17863-STB**

Lab Sample ID: 1172456007

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Toluene	7.22J	ug/Kg

Client Sample ID: **17863-B5S1**

Lab Sample ID: 1172456012

TCLP Volatiles GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzene	0.00600J	mg/L

Client Sample ID: **17863-B6S1**

Lab Sample ID: 1172456013

TCLP Volatiles GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzene	0.00750J	mg/L



Results of 17863-B1S1

Client Sample ID: 17863-B1S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456001
Lab Project ID: 1172456

Collection Date: 05/17/17 12:03
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):92.5
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK102
Analyst: KMD
Analytical Date/Time: 05/20/17 15:23
Container ID: 1172456001-A

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.309 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK103
Analyst: KMD
Analytical Date/Time: 05/20/17 15:23
Container ID: 1172456001-A

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.309 g
Prep Extract Vol: 1 mL

Results of 17863-B1S1

Client Sample ID: **17863-B1S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456001
 Lab Project ID: 1172456

Collection Date: 05/17/17 12:03
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):92.5
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	608		83.1	24.9	mg/Kg	50		05/22/17 13:59
Surrogates								
4-Bromofluorobenzene (surr)	2180	*	50-150		%	50		05/22/17 13:59

Batch Information

Analytical Batch: VFC13644
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/22/17 13:59
 Container ID: 1172456001-B

Prep Batch: VXX30534
 Prep Method: SW5035A
 Prep Date/Time: 05/17/17 12:03
 Prep Initial Wt./Vol.: 107.612 g
 Prep Extract Vol: 33.0733 mL



Results of 17863-B1S1

Client Sample ID: 17863-B1S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456001
Lab Project ID: 1172456

Collection Date: 05/17/17 12:03
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):92.5
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 17863-B1S1

Client Sample ID: **17863-B1S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456001
 Lab Project ID: 1172456

Collection Date: 05/17/17 12:03
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):92.5
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	41.5 U	83.1	25.9	ug/Kg	5		05/18/17 21:02
Chloromethane	41.5 U	83.1	25.9	ug/Kg	5		05/18/17 21:02
cis-1,2-Dichloroethene	41.5 U	83.1	25.9	ug/Kg	5		05/18/17 21:02
cis-1,3-Dichloropropene	20.8 U	41.5	13.0	ug/Kg	5		05/18/17 21:02
Dibromochloromethane	41.5 U	83.1	25.9	ug/Kg	5		05/18/17 21:02
Dibromomethane	41.5 U	83.1	25.9	ug/Kg	5		05/18/17 21:02
Dichlorodifluoromethane	83.0 U	166	49.8	ug/Kg	5		05/18/17 21:02
Ethylbenzene	9810	83.1	25.9	ug/Kg	5		05/18/17 21:02
Freon-113	166 U	332	103	ug/Kg	5		05/18/17 21:02
Hexachlorobutadiene	33.3 U	66.5	20.6	ug/Kg	5		05/18/17 21:02
Isopropylbenzene (Cumene)	3370	83.1	25.9	ug/Kg	5		05/18/17 21:02
Methylene chloride	166 U	332	103	ug/Kg	5		05/18/17 21:02
Methyl-t-butyl ether	166 U	332	103	ug/Kg	5		05/18/17 21:02
Naphthalene	12900	83.1	25.9	ug/Kg	5		05/18/17 21:02
n-Butylbenzene	41.5 U	83.1	25.9	ug/Kg	5		05/18/17 21:02
n-Propylbenzene	10200	83.1	25.9	ug/Kg	5		05/18/17 21:02
o-Xylene	16100	831	259	ug/Kg	50		05/24/17 20:18
P & M -Xylene	76600	1660	498	ug/Kg	50		05/24/17 20:18
sec-Butylbenzene	1790	83.1	25.9	ug/Kg	5		05/18/17 21:02
Styrene	41.5 U	83.1	25.9	ug/Kg	5		05/18/17 21:02
tert-Butylbenzene	567	83.1	25.9	ug/Kg	5		05/18/17 21:02
Tetrachloroethene	20.8 U	41.5	13.0	ug/Kg	5		05/18/17 21:02
Toluene	1630	83.1	25.9	ug/Kg	5		05/18/17 21:02
trans-1,2-Dichloroethene	41.5 U	83.1	25.9	ug/Kg	5		05/18/17 21:02
trans-1,3-Dichloropropene	20.8 U	41.5	13.0	ug/Kg	5		05/18/17 21:02
Trichloroethene	16.6 U	33.2	10.3	ug/Kg	5		05/18/17 21:02
Trichlorofluoromethane	83.0 U	166	49.8	ug/Kg	5		05/18/17 21:02
Vinyl acetate	166 U	332	103	ug/Kg	5		05/18/17 21:02
Vinyl chloride	16.6 U	33.2	10.3	ug/Kg	5		05/18/17 21:02
Xylenes (total)	92700	2490	758	ug/Kg	50		05/24/17 20:18
Surrogates							
1,2-Dichloroethane-D4 (surr)	94.9	71-136		%	5		05/18/17 21:02
4-Bromofluorobenzene (surr)	204 *	55-151		%	5		05/18/17 21:02
Toluene-d8 (surr)	94	85-116		%	5		05/18/17 21:02

Results of 17863-B1S1

Client Sample ID: **17863-B1S1**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172456001
Lab Project ID: 1172456

Collection Date: 05/17/17 12:03
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):92.5
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS16752
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/24/17 20:18
Container ID:

Prep Batch: VXX30544
Prep Method: SW5035A
Prep Date/Time: 05/17/17 12:03
Prep Initial Wt./Vol.: 107.612 g
Prep Extract Vol: 33.0733 mL

Analytical Batch: VMS16742
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/18/17 21:02
Container ID: 1172456001-B

Prep Batch: VXX30525
Prep Method: SW5035A
Prep Date/Time: 05/17/17 12:03
Prep Initial Wt./Vol.: 107.612 g
Prep Extract Vol: 33.0733 mL



Results of 17863-B2S1

Client Sample ID: 17863-B2S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456002
Lab Project ID: 1172456

Collection Date: 05/17/17 11:37
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):93.7
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 777, 85.3, 26.5, mg/Kg, 4, 05/20/17 15:32

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 105, 50-150, %, 4, 05/20/17 15:32

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK102
Analyst: KMD
Analytical Date/Time: 05/20/17 15:32
Container ID: 1172456002-A

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.014 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 437, 85.3, 26.5, mg/Kg, 4, 05/20/17 15:32

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 94.9, 50-150, %, 4, 05/20/17 15:32

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK103
Analyst: KMD
Analytical Date/Time: 05/20/17 15:32
Container ID: 1172456002-A

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.014 g
Prep Extract Vol: 1 mL

Results of 17863-B2S1

Client Sample ID: **17863-B2S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456002
 Lab Project ID: 1172456

Collection Date: 05/17/17 11:37
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):93.7
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	389		81.0	24.3	mg/Kg	50		05/22/17 14:18
Surrogates								
4-Bromofluorobenzene (surr)	1170	*	50-150		%	50		05/22/17 14:18

Batch Information

Analytical Batch: VFC13644
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/22/17 14:18
 Container ID: 1172456002-B

Prep Batch: VXX30534
 Prep Method: SW5035A
 Prep Date/Time: 05/17/17 11:37
 Prep Initial Wt./Vol.: 103.856 g
 Prep Extract Vol: 31.5352 mL



Results of 17863-B2S1

Client Sample ID: 17863-B2S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456002
Lab Project ID: 1172456

Collection Date: 05/17/17 11:37
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):93.7
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 17863-B2S1

Client Sample ID: 17863-B2S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456002
Lab Project ID: 1172456

Collection Date: 05/17/17 11:37
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):93.7
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 17863-B2S1

Client Sample ID: **17863-B2S1**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172456002
Lab Project ID: 1172456

Collection Date: 05/17/17 11:37
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):93.7
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS16742
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/18/17 19:36
Container ID: 1172456002-B

Prep Batch: VXX30525
Prep Method: SW5035A
Prep Date/Time: 05/17/17 11:37
Prep Initial Wt./Vol.: 103.856 g
Prep Extract Vol: 31.5352 mL

Analytical Batch: VMS16752
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/24/17 20:35
Container ID:

Prep Batch: VXX30544
Prep Method: SW5035A
Prep Date/Time: 05/17/17 11:37
Prep Initial Wt./Vol.: 103.856 g
Prep Extract Vol: 31.5352 mL



Results of 17863-B3S1

Client Sample ID: 17863-B3S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456003
Lab Project ID: 1172456

Collection Date: 05/17/17 11:01
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):92.5
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC13355
Analytical Method: AK102
Analyst: FDR
Analytical Date/Time: 05/23/17 15:51
Container ID: 1172456003-A
Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.271 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK103
Analyst: KMD
Analytical Date/Time: 05/20/17 15:43
Container ID: 1172456003-A
Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.271 g
Prep Extract Vol: 1 mL

Results of 17863-B3S1

Client Sample ID: **17863-B3S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456003
 Lab Project ID: 1172456

Collection Date: 05/17/17 11:01
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):92.5
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	649		81.0	24.3	mg/Kg	50		05/22/17 14:37
Surrogates								
4-Bromofluorobenzene (surr)	983	*	50-150		%	50		05/22/17 14:37

Batch Information

Analytical Batch: VFC13644
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/22/17 14:37
 Container ID: 1172456003-B

Prep Batch: VXX30534
 Prep Method: SW5035A
 Prep Date/Time: 05/17/17 11:01
 Prep Initial Wt./Vol.: 111.173 g
 Prep Extract Vol: 33.3335 mL



Results of 17863-B3S1

Client Sample ID: 17863-B3S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456003
Lab Project ID: 1172456

Collection Date: 05/17/17 11:01
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):92.5
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 17863-B3S1

Client Sample ID: **17863-B3S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456003
 Lab Project ID: 1172456

Collection Date: 05/17/17 11:01
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):92.5
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	40.5 U	81.0	25.3	ug/Kg	5		05/18/17 19:53
Chloromethane	40.5 U	81.0	25.3	ug/Kg	5		05/18/17 19:53
cis-1,2-Dichloroethene	40.5 U	81.0	25.3	ug/Kg	5		05/18/17 19:53
cis-1,3-Dichloropropene	20.3 U	40.5	12.6	ug/Kg	5		05/18/17 19:53
Dibromochloromethane	40.5 U	81.0	25.3	ug/Kg	5		05/18/17 19:53
Dibromomethane	40.5 U	81.0	25.3	ug/Kg	5		05/18/17 19:53
Dichlorodifluoromethane	81.0 U	162	48.6	ug/Kg	5		05/18/17 19:53
Ethylbenzene	480	81.0	25.3	ug/Kg	5		05/18/17 19:53
Freon-113	162 U	324	100	ug/Kg	5		05/18/17 19:53
Hexachlorobutadiene	32.4 U	64.8	20.1	ug/Kg	5		05/18/17 19:53
Isopropylbenzene (Cumene)	35.2 J	81.0	25.3	ug/Kg	5		05/18/17 19:53
Methylene chloride	162 U	324	100	ug/Kg	5		05/18/17 19:53
Methyl-t-butyl ether	162 U	324	100	ug/Kg	5		05/18/17 19:53
Naphthalene	11800	81.0	25.3	ug/Kg	5		05/18/17 19:53
n-Butylbenzene	40.5 U	81.0	25.3	ug/Kg	5		05/18/17 19:53
n-Propylbenzene	53.6 J	81.0	25.3	ug/Kg	5		05/18/17 19:53
o-Xylene	35200	810	253	ug/Kg	50		05/24/17 20:52
P & M -Xylene	59100	1620	486	ug/Kg	50		05/24/17 20:52
sec-Butylbenzene	230	81.0	25.3	ug/Kg	5		05/18/17 19:53
Styrene	40.5 U	81.0	25.3	ug/Kg	5		05/18/17 19:53
tert-Butylbenzene	467	81.0	25.3	ug/Kg	5		05/18/17 19:53
Tetrachloroethene	20.3 U	40.5	12.6	ug/Kg	5		05/18/17 19:53
Toluene	898	81.0	25.3	ug/Kg	5		05/18/17 19:53
trans-1,2-Dichloroethene	40.5 U	81.0	25.3	ug/Kg	5		05/18/17 19:53
trans-1,3-Dichloropropene	20.3 U	40.5	12.6	ug/Kg	5		05/18/17 19:53
Trichloroethene	16.2 U	32.4	10.0	ug/Kg	5		05/18/17 19:53
Trichlorofluoromethane	81.0 U	162	48.6	ug/Kg	5		05/18/17 19:53
Vinyl acetate	162 U	324	100	ug/Kg	5		05/18/17 19:53
Vinyl chloride	16.2 U	32.4	10.0	ug/Kg	5		05/18/17 19:53
Xylenes (total)	94300	2430	739	ug/Kg	50		05/24/17 20:52
Surrogates							
1,2-Dichloroethane-D4 (surr)	96.2	71-136		%	5		05/18/17 19:53
4-Bromofluorobenzene (surr)	361 *	55-151		%	5		05/18/17 19:53
Toluene-d8 (surr)	97.2	85-116		%	5		05/18/17 19:53

Results of 17863-B3S1

Client Sample ID: **17863-B3S1**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172456003
Lab Project ID: 1172456

Collection Date: 05/17/17 11:01
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):92.5
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS16742
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/18/17 19:53
Container ID: 1172456003-B

Prep Batch: VXX30525
Prep Method: SW5035A
Prep Date/Time: 05/17/17 11:01
Prep Initial Wt./Vol.: 111.173 g
Prep Extract Vol: 33.3335 mL

Analytical Batch: VMS16752
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/24/17 20:52
Container ID:

Prep Batch: VXX30544
Prep Method: SW5035A
Prep Date/Time: 05/17/17 11:01
Prep Initial Wt./Vol.: 111.173 g
Prep Extract Vol: 33.3335 mL



Results of 17863-B4S1

Client Sample ID: 17863-B4S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456004
Lab Project ID: 1172456

Collection Date: 05/17/17 10:37
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 2110, 105, 32.5, mg/Kg, 1, 05/20/17 14:24

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 109, 50-150, %, 1, 05/20/17 14:24

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK102
Analyst: KMD
Analytical Date/Time: 05/20/17 14:24
Container ID: 1172456004-A

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.39 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 315, 105, 32.5, mg/Kg, 1, 05/20/17 14:24

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 110, 50-150, %, 1, 05/20/17 14:24

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK103
Analyst: KMD
Analytical Date/Time: 05/20/17 14:24
Container ID: 1172456004-A

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.39 g
Prep Extract Vol: 5 mL

Results of 17863-B4S1

Client Sample ID: **17863-B4S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456004
 Lab Project ID: 1172456

Collection Date: 05/17/17 10:37
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):94.3
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	830		80.2	24.1	mg/Kg	50		05/22/17 14:56
Surrogates								
4-Bromofluorobenzene (surr)	1300	*	50-150		%	50		05/22/17 14:56

Batch Information

Analytical Batch: VFC13644
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/22/17 14:56
 Container ID: 1172456004-B

Prep Batch: VXX30534
 Prep Method: SW5035A
 Prep Date/Time: 05/17/17 10:37
 Prep Initial Wt./Vol.: 101.818 g
 Prep Extract Vol: 30.8108 mL



Results of 17863-B4S1

Client Sample ID: **17863-B4S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456004
 Lab Project ID: 1172456

Collection Date: 05/17/17 10:37
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):94.3
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	32.1 U	64.2	19.9	ug/Kg	5		05/18/17 20:11
1,1,1-Trichloroethane	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
1,1,2,2-Tetrachloroethane	20.1 U	40.1	12.5	ug/Kg	5		05/18/17 20:11
1,1,2-Trichloroethane	16.1 U	32.1	9.95	ug/Kg	5		05/18/17 20:11
1,1-Dichloroethane	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
1,1-Dichloroethene	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
1,1-Dichloropropene	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
1,2,3-Trichlorobenzene	80.0 U	160	48.1	ug/Kg	5		05/18/17 20:11
1,2,3-Trichloropropane	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
1,2,4-Trichlorobenzene	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
1,2,4-Trimethylbenzene	83000	1600	481	ug/Kg	50		05/24/17 21:09
1,2-Dibromo-3-chloropropane	161 U	321	99.5	ug/Kg	5		05/18/17 20:11
1,2-Dibromoethane	16.1 U	32.1	9.95	ug/Kg	5		05/18/17 20:11
1,2-Dichlorobenzene	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
1,2-Dichloroethane	16.1 U	32.1	9.95	ug/Kg	5		05/18/17 20:11
1,2-Dichloropropane	16.1 U	32.1	9.95	ug/Kg	5		05/18/17 20:11
1,3,5-Trimethylbenzene	78600	802	250	ug/Kg	50		05/24/17 21:09
1,3-Dichlorobenzene	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
1,3-Dichloropropane	16.1 U	32.1	9.95	ug/Kg	5		05/18/17 20:11
1,4-Dichlorobenzene	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
2,2-Dichloropropane	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
2-Butanone (MEK)	401 U	802	250	ug/Kg	5		05/18/17 20:11
2-Chlorotoluene	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
2-Hexanone	161 U	321	99.5	ug/Kg	5		05/18/17 20:11
4-Chlorotoluene	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
4-Isopropyltoluene	8080	80.2	25.0	ug/Kg	5		05/18/17 20:11
4-Methyl-2-pentanone (MIBK)	401 U	802	250	ug/Kg	5		05/18/17 20:11
Benzene	227	40.1	12.5	ug/Kg	5		05/18/17 20:11
Bromobenzene	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
Bromochloromethane	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
Bromodichloromethane	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
Bromoform	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
Bromomethane	321 U	642	199	ug/Kg	5		05/18/17 20:11
Carbon disulfide	161 U	321	99.5	ug/Kg	5		05/18/17 20:11
Carbon tetrachloride	20.1 U	40.1	12.5	ug/Kg	5		05/18/17 20:11
Chlorobenzene	40.1 U	80.2	25.0	ug/Kg	5		05/18/17 20:11
Chloroethane	321 U	642	199	ug/Kg	5		05/18/17 20:11

Print Date: 05/26/2017 4:27:41PM

J flagging is activated



Results of 17863-B4S1

Client Sample ID: 17863-B4S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456004
Lab Project ID: 1172456

Collection Date: 05/17/17 10:37
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of **17863-B4S1**

Client Sample ID: **17863-B4S1**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172456004
Lab Project ID: 1172456

Collection Date: 05/17/17 10:37
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS16742
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/18/17 20:11
Container ID: 1172456004-B

Prep Batch: VXX30525
Prep Method: SW5035A
Prep Date/Time: 05/17/17 10:37
Prep Initial Wt./Vol.: 101.818 g
Prep Extract Vol: 30.8108 mL

Analytical Batch: VMS16752
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/24/17 21:09
Container ID:

Prep Batch: VXX30544
Prep Method: SW5035A
Prep Date/Time: 05/17/17 10:37
Prep Initial Wt./Vol.: 101.818 g
Prep Extract Vol: 30.8108 mL



Results of 17863-B5S1

Client Sample ID: 17863-B5S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456005
Lab Project ID: 1172456

Collection Date: 05/17/17 09:28
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):93.9
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 2360, 84.6, 26.2, mg/Kg, 4, 05/20/17 15:52

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 0, *, 50-150, %, 4, 05/20/17 15:52

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK102
Analyst: KMD
Analytical Date/Time: 05/20/17 15:52
Container ID: 1172456005-A

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.203 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 205, 84.6, 26.2, mg/Kg, 4, 05/20/17 15:52

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 0, *, 50-150, %, 4, 05/20/17 15:52

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK103
Analyst: KMD
Analytical Date/Time: 05/20/17 15:52
Container ID: 1172456005-A

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.203 g
Prep Extract Vol: 1 mL

Results of 17863-B5S1

Client Sample ID: **17863-B5S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456005
 Lab Project ID: 1172456

Collection Date: 05/17/17 09:28
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):93.9
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	489		82.4	24.7	mg/Kg	50		05/22/17 15:15
Surrogates								
4-Bromofluorobenzene (surr)	846	*	50-150		%	50		05/22/17 15:15

Batch Information

Analytical Batch: VFC13644
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/22/17 15:15
 Container ID: 1172456005-B

Prep Batch: VXX30534
 Prep Method: SW5035A
 Prep Date/Time: 05/17/17 09:28
 Prep Initial Wt./Vol.: 100.486 g
 Prep Extract Vol: 31.104 mL



Results of 17863-B5S1

Client Sample ID: **17863-B5S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456005
 Lab Project ID: 1172456

Collection Date: 05/17/17 09:28
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):93.9
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	33.1 U	66.3	20.6	ug/Kg	5		05/18/17 20:28
1,1,1-Trichloroethane	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
1,1,2,2-Tetrachloroethane	20.8 U	41.5	12.9	ug/Kg	5		05/18/17 20:28
1,1,2-Trichloroethane	16.6 U	33.2	10.3	ug/Kg	5		05/18/17 20:28
1,1-Dichloroethane	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
1,1-Dichloroethene	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
1,1-Dichloropropene	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
1,2,3-Trichlorobenzene	83.0 U	166	49.7	ug/Kg	5		05/18/17 20:28
1,2,3-Trichloropropane	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
1,2,4-Trichlorobenzene	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
1,2,4-Trimethylbenzene	119000	1660	497	ug/Kg	50		05/24/17 21:26
1,2-Dibromo-3-chloropropane	166 U	332	103	ug/Kg	5		05/18/17 20:28
1,2-Dibromoethane	16.6 U	33.2	10.3	ug/Kg	5		05/18/17 20:28
1,2-Dichlorobenzene	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
1,2-Dichloroethane	16.6 U	33.2	10.3	ug/Kg	5		05/18/17 20:28
1,2-Dichloropropane	16.6 U	33.2	10.3	ug/Kg	5		05/18/17 20:28
1,3,5-Trimethylbenzene	56600	829	259	ug/Kg	50		05/24/17 21:26
1,3-Dichlorobenzene	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
1,3-Dichloropropane	16.6 U	33.2	10.3	ug/Kg	5		05/18/17 20:28
1,4-Dichlorobenzene	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
2,2-Dichloropropane	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
2-Butanone (MEK)	415 U	829	259	ug/Kg	5		05/18/17 20:28
2-Chlorotoluene	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
2-Hexanone	166 U	332	103	ug/Kg	5		05/18/17 20:28
4-Chlorotoluene	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
4-Isopropyltoluene	4130	82.9	25.9	ug/Kg	5		05/18/17 20:28
4-Methyl-2-pentanone (MIBK)	415 U	829	259	ug/Kg	5		05/18/17 20:28
Benzene	73.0	41.5	12.9	ug/Kg	5		05/18/17 20:28
Bromobenzene	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
Bromochloromethane	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
Bromodichloromethane	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
Bromoform	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
Bromomethane	332 U	663	206	ug/Kg	5		05/18/17 20:28
Carbon disulfide	166 U	332	103	ug/Kg	5		05/18/17 20:28
Carbon tetrachloride	20.8 U	41.5	12.9	ug/Kg	5		05/18/17 20:28
Chlorobenzene	41.5 U	82.9	25.9	ug/Kg	5		05/18/17 20:28
Chloroethane	332 U	663	206	ug/Kg	5		05/18/17 20:28

Print Date: 05/26/2017 4:27:41PM

J flagging is activated



Results of 17863-B5S1

Client Sample ID: 17863-B5S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456005
Lab Project ID: 1172456

Collection Date: 05/17/17 09:28
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):93.9
Location:

Results by Volatile GC/MS

Table with columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 17863-B5S1

Client Sample ID: **17863-B5S1**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172456005
Lab Project ID: 1172456

Collection Date: 05/17/17 09:28
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):93.9
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS16742
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/18/17 20:28
Container ID: 1172456005-B

Prep Batch: VXX30525
Prep Method: SW5035A
Prep Date/Time: 05/17/17 09:28
Prep Initial Wt./Vol.: 99.697 g
Prep Extract Vol: 31.0561 mL

Analytical Batch: VMS16752
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/24/17 21:26
Container ID:

Prep Batch: VXX30544
Prep Method: SW5035A
Prep Date/Time: 05/17/17 09:28
Prep Initial Wt./Vol.: 99.697 g
Prep Extract Vol: 31.0561 mL



Results of 17863-B6S1

Client Sample ID: 17863-B6S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456006
Lab Project ID: 1172456

Collection Date: 05/17/17 11:20
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):95.5
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists surrogate compounds like 2-Fluorobiphenyl and Terphenyl-d14.

Batch Information

Analytical Batch: XMS10043
Analytical Method: 8270D SIM (PAH)
Analyst: S.G
Analytical Date/Time: 05/25/17 03:52
Container ID: 1172456006-A

Prep Batch: XXX37385
Prep Method: SW3550C
Prep Date/Time: 05/19/17 11:41
Prep Initial Wt./Vol.: 22.691 g
Prep Extract Vol: 5 mL

Analytical Batch: XMS10050
Analytical Method: 8270D SIM (PAH)
Analyst: S.G
Analytical Date/Time: 05/25/17 14:14
Container ID: 1172456006-A

Prep Batch: XXX37385
Prep Method: SW3550C
Prep Date/Time: 05/19/17 11:41
Prep Initial Wt./Vol.: 22.691 g
Prep Extract Vol: 5 mL



Results of 17863-B6S1

Client Sample ID: 17863-B6S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456006
Lab Project ID: 1172456

Collection Date: 05/17/17 11:20
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):95.5
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 6060, 828, 257, mg/Kg, 40, 05/23/17 16:00

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 0, *, 50-150, %, 40, 05/23/17 16:00

Batch Information

Analytical Batch: XFC13355
Analytical Method: AK102
Analyst: FDR
Analytical Date/Time: 05/23/17 16:00
Container ID: 1172456006-A

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.346 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 174, 82.8, 25.7, mg/Kg, 4, 05/20/17 16:02

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 0, *, 50-150, %, 4, 05/20/17 16:02

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK103
Analyst: KMD
Analytical Date/Time: 05/20/17 16:02
Container ID: 1172456006-A

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 05/19/17 09:29
Prep Initial Wt./Vol.: 30.346 g
Prep Extract Vol: 1 mL

Results of 17863-B6S1

Client Sample ID: **17863-B6S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456006
 Lab Project ID: 1172456

Collection Date: 05/17/17 11:20
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):95.5
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	661		79.6	23.9	mg/Kg	50		05/22/17 15:34
Surrogates								
4-Bromofluorobenzene (surr)	680	*	50-150		%	50		05/22/17 15:34

Batch Information

Analytical Batch: VFC13644
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/22/17 15:34
 Container ID: 1172456006-B

Prep Batch: VXX30534
 Prep Method: SW5035A
 Prep Date/Time: 05/17/17 11:20
 Prep Initial Wt./Vol.: 96.441 g
 Prep Extract Vol: 29.3218 mL



Results of 17863-B6S1

Client Sample ID: 17863-B6S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456006
Lab Project ID: 1172456

Collection Date: 05/17/17 11:20
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):95.5
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 05/26/2017 4:27:41PM

J flagging is activated



Results of 17863-B6S1

Client Sample ID: **17863-B6S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456006
 Lab Project ID: 1172456

Collection Date: 05/17/17 11:20
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):95.5
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	39.8 U	79.6	24.8	ug/Kg	5		05/18/17 20:45
Chloromethane	39.8 U	79.6	24.8	ug/Kg	5		05/18/17 20:45
cis-1,2-Dichloroethene	39.8 U	79.6	24.8	ug/Kg	5		05/18/17 20:45
cis-1,3-Dichloropropene	19.9 U	39.8	12.4	ug/Kg	5		05/18/17 20:45
Dibromochloromethane	39.8 U	79.6	24.8	ug/Kg	5		05/18/17 20:45
Dibromomethane	39.8 U	79.6	24.8	ug/Kg	5		05/18/17 20:45
Dichlorodifluoromethane	79.5 U	159	47.7	ug/Kg	5		05/18/17 20:45
Ethylbenzene	75.1 J	79.6	24.8	ug/Kg	5		05/18/17 20:45
Freon-113	159 U	318	98.7	ug/Kg	5		05/18/17 20:45
Hexachlorobutadiene	31.9 U	63.7	19.7	ug/Kg	5		05/18/17 20:45
Isopropylbenzene (Cumene)	164	79.6	24.8	ug/Kg	5		05/18/17 20:45
Methylene chloride	159 U	318	98.7	ug/Kg	5		05/18/17 20:45
Methyl-t-butyl ether	159 U	318	98.7	ug/Kg	5		05/18/17 20:45
Naphthalene	13900	79.6	24.8	ug/Kg	5		05/18/17 20:45
n-Butylbenzene	39.8 U	79.6	24.8	ug/Kg	5		05/18/17 20:45
n-Propylbenzene	251	79.6	24.8	ug/Kg	5		05/18/17 20:45
o-Xylene	58000	796	248	ug/Kg	50		05/24/17 21:43
P & M -Xylene	55100	1590	477	ug/Kg	50		05/24/17 21:43
sec-Butylbenzene	569	79.6	24.8	ug/Kg	5		05/18/17 20:45
Styrene	39.8 U	79.6	24.8	ug/Kg	5		05/18/17 20:45
tert-Butylbenzene	530	79.6	24.8	ug/Kg	5		05/18/17 20:45
Tetrachloroethene	19.9 U	39.8	12.4	ug/Kg	5		05/18/17 20:45
Toluene	818	79.6	24.8	ug/Kg	5		05/18/17 20:45
trans-1,2-Dichloroethene	39.8 U	79.6	24.8	ug/Kg	5		05/18/17 20:45
trans-1,3-Dichloropropene	19.9 U	39.8	12.4	ug/Kg	5		05/18/17 20:45
Trichloroethene	15.9 U	31.8	9.87	ug/Kg	5		05/18/17 20:45
Trichlorofluoromethane	79.5 U	159	47.7	ug/Kg	5		05/18/17 20:45
Vinyl acetate	159 U	318	98.7	ug/Kg	5		05/18/17 20:45
Vinyl chloride	15.9 U	31.8	9.87	ug/Kg	5		05/18/17 20:45
Xylenes (total)	113000	2390	726	ug/Kg	50		05/24/17 21:43
Surrogates							
1,2-Dichloroethane-D4 (surr)	91.8	71-136		%	5		05/18/17 20:45
4-Bromofluorobenzene (surr)	274 *	55-151		%	5		05/18/17 20:45
Toluene-d8 (surr)	98.1	85-116		%	5		05/18/17 20:45

Results of 17863-B6S1

Client Sample ID: **17863-B6S1**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172456006
Lab Project ID: 1172456

Collection Date: 05/17/17 11:20
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):95.5
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS16742
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/18/17 20:45
Container ID: 1172456006-B

Prep Batch: VXX30525
Prep Method: SW5035A
Prep Date/Time: 05/17/17 11:20
Prep Initial Wt./Vol.: 96.441 g
Prep Extract Vol: 29.3218 mL

Analytical Batch: VMS16752
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/24/17 21:43
Container ID:

Prep Batch: VXX30544
Prep Method: SW5035A
Prep Date/Time: 05/17/17 11:20
Prep Initial Wt./Vol.: 96.441 g
Prep Extract Vol: 29.3218 mL

Results of 17863-STB

Client Sample ID: **17863-STB**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456007
 Lab Project ID: 1172456

Collection Date: 05/17/17 14:00
 Received Date: 05/17/17 16:04
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.955 U	1.91	0.573	mg/Kg	1		05/19/17 16:13
Surrogates							
4-Bromofluorobenzene (surr)	86.3	50-150		%	1		05/19/17 16:13

Batch Information

Analytical Batch: VFC13642
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/19/17 16:13
 Container ID: 1172456007-A

Prep Batch: VXX30526
 Prep Method: SW5035A
 Prep Date/Time: 05/17/17 14:00
 Prep Initial Wt./Vol.: 65.451 g
 Prep Extract Vol: 25 mL



Results of 17863-STB

Client Sample ID: 17863-STB
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456007
Lab Project ID: 1172456

Collection Date: 05/17/17 14:00
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their corresponding test results.

Print Date: 05/26/2017 4:27:41PM

J flagging is activated



Results of 17863-STB

Client Sample ID: 17863-STB
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456007
Lab Project ID: 1172456

Collection Date: 05/17/17 14:00
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 17863-STB

Client Sample ID: **17863-STB**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172456007
Lab Project ID: 1172456

Collection Date: 05/17/17 14:00
Received Date: 05/17/17 16:04
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS16742
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/18/17 17:54
Container ID: 1172456007-A

Prep Batch: VXX30525
Prep Method: SW5035A
Prep Date/Time: 05/17/17 14:00
Prep Initial Wt./Vol.: 65.451 g
Prep Extract Vol: 25 mL

Results of 17863-B1S1

Client Sample ID: **17863-B1S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456008
 Lab Project ID: 1172456

Collection Date: 05/17/17 12:03
 Received Date: 05/17/17 16:04
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Volatiles GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.0100 U	0.0200	0.00600	mg/L	50	(<0.5)	05/24/17 22:24

Surrogates

1,2-Dichloroethane-D4 (surr)	103	81-118		%	50		05/24/17 22:24
4-Bromofluorobenzene (surr)	97.9	85-114		%	50		05/24/17 22:24
Toluene-d8 (surr)	97.7	89-112		%	50		05/24/17 22:24

Batch Information

Analytical Batch: VMS16753
 Analytical Method: SW8260C TCLP
 Analyst: TJT
 Analytical Date/Time: 05/24/17 22:24
 Container ID: 1172456008-A

Prep Batch: VXX30545
 Prep Method: SW5030B
 Prep Date/Time: 05/24/17 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of 17863-B2S1

Client Sample ID: **17863-B2S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456009
 Lab Project ID: 1172456

Collection Date: 05/17/17 11:37
 Received Date: 05/17/17 16:04
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Volatiles GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.0100 U	0.0200	0.00600	mg/L	50	(<0.5)	05/24/17 22:07

Surrogates

1,2-Dichloroethane-D4 (surr)	103	81-118		%	50		05/24/17 22:07
4-Bromofluorobenzene (surr)	98.7	85-114		%	50		05/24/17 22:07
Toluene-d8 (surr)	97.5	89-112		%	50		05/24/17 22:07

Batch Information

Analytical Batch: VMS16753
 Analytical Method: SW8260C TCLP
 Analyst: TJT
 Analytical Date/Time: 05/24/17 22:07
 Container ID: 1172456009-A

Prep Batch: VXX30545
 Prep Method: SW5030B
 Prep Date/Time: 05/24/17 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 17863-B3S1

Client Sample ID: 17863-B3S1
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172456010
Lab Project ID: 1172456

Collection Date: 05/17/17 11:01
Received Date: 05/17/17 16:04
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by TCLP Volatiles GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: Benzene, 0.0100 U, 0.0200, 0.00600, mg/L, 50, (<0.5), 05/24/17 21:50

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: 1,2-Dichloroethane-D4 (surr), 4-Bromofluorobenzene (surr), Toluene-d8 (surr)

Batch Information

Analytical Batch: VMS16753
Analytical Method: SW8260C TCLP
Analyst: TJT
Analytical Date/Time: 05/24/17 21:50
Container ID: 1172456010-A

Prep Batch: VXX30545
Prep Method: SW5030B
Prep Date/Time: 05/24/17 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of **17863-B4S1**

Client Sample ID: **17863-B4S1**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172456011
Lab Project ID: 1172456

Collection Date: 05/17/17 10:37
Received Date: 05/17/17 16:04
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by **TCLP Volatiles GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.0100 U	0.0200	0.00600	mg/L	50	(<0.5)	05/24/17 21:32

Surrogates

1,2-Dichloroethane-D4 (surr)	103	81-118		%	50		05/24/17 21:32
4-Bromofluorobenzene (surr)	98.4	85-114		%	50		05/24/17 21:32
Toluene-d8 (surr)	97	89-112		%	50		05/24/17 21:32

Batch Information

Analytical Batch: VMS16753
Analytical Method: SW8260C TCLP
Analyst: TJT
Analytical Date/Time: 05/24/17 21:32
Container ID: 1172456011-A

Prep Batch: VXX30545
Prep Method: SW5030B
Prep Date/Time: 05/24/17 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of 17863-B5S1

Client Sample ID: **17863-B5S1**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172456012
 Lab Project ID: 1172456

Collection Date: 05/17/17 09:28
 Received Date: 05/17/17 16:04
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Volatiles GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.00600 J	0.0200	0.00600	mg/L	50	(<0.5)	05/24/17 21:15

Surrogates

1,2-Dichloroethane-D4 (surr)	103	81-118		%	50		05/24/17 21:15
4-Bromofluorobenzene (surr)	100	85-114		%	50		05/24/17 21:15
Toluene-d8 (surr)	96.6	89-112		%	50		05/24/17 21:15

Batch Information

Analytical Batch: VMS16753
 Analytical Method: SW8260C TCLP
 Analyst: TJT
 Analytical Date/Time: 05/24/17 21:15
 Container ID: 1172456012-A

Prep Batch: VXX30545
 Prep Method: SW5030B
 Prep Date/Time: 05/24/17 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **17863-B6S1**

Client Sample ID: **17863-B6S1**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172456013
Lab Project ID: 1172456

Collection Date: 05/17/17 11:20
Received Date: 05/17/17 16:04
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by **TCLP Volatiles GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.00750 J	0.0200	0.00600	mg/L	50	(<0.5)	05/24/17 20:57

Surrogates

1,2-Dichloroethane-D4 (surr)	104	81-118		%	50		05/24/17 20:57
4-Bromofluorobenzene (surr)	101	85-114		%	50		05/24/17 20:57
Toluene-d8 (surr)	96.4	89-112		%	50		05/24/17 20:57

Batch Information

Analytical Batch: VMS16753
Analytical Method: SW8260C TCLP
Analyst: TJT
Analytical Date/Time: 05/24/17 20:57
Container ID: 1172456013-A

Prep Batch: VXX30545
Prep Method: SW5030B
Prep Date/Time: 05/24/17 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1759292 [SPT/10161]
Blank Lab ID: 1385422

Matrix: Soil/Solid (dry weight)

QC for Samples:
1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT10161
Analytical Method: SM21 2540G
Instrument:
Analyst: MWJ
Analytical Date/Time: 5/18/2017 5:00:00PM

Print Date: 05/26/2017 4:27:47PM

Duplicate Sample Summary

Original Sample ID: 1172462001

Duplicate Sample ID: 1385423

QC for Samples:

1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Analysis Date: 05/18/2017 17:00

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	74.6	70.5	%	5.70	(< 15)

Batch Information

Analytical Batch: SPT10161

Analytical Method: SM21 2540G

Instrument:

Analyst: MWJ

Print Date: 05/26/2017 4:27:48PM



Method Blank

Blank ID: MB for HBN 1759352 [VXX/30525]

Matrix: Soil/Solid (dry weight)

Blank Lab ID: 1385684

QC for Samples:

1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006, 1172456007

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	10.0U	20.0	6.20	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	6.25U	12.5	3.90	ug/Kg
1,1,2-Trichloroethane	5.00U	10.0	3.10	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	12.5U	25.0	7.80	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	50.0U	100	31.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	12.5U	25.0	7.80	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	12.5U	25.0	7.80	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	100U	200	62.0	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg
Chloroform	12.5U	25.0	7.80	ug/Kg

Print Date: 05/26/2017 4:27:51PM

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Member of SGS Group

Method Blank

Blank ID: MB for HBN 1759352 [VXX/30525]

Matrix: Soil/Solid (dry weight)

Blank Lab ID: 1385684

QC for Samples:

1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006, 1172456007

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Dibromochloromethane	12.5U	25.0	7.80	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	10.0U	20.0	6.20	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Trichloroethene	5.00U	10.0	3.10	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	5.00U	10.0	3.10	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	105	71-136		%
4-Bromofluorobenzene (surr)	95.6	55-151		%
Toluene-d8 (surr)	97.2	85-116		%

Print Date: 05/26/2017 4:27:51PM



Method Blank

Blank ID: MB for HBN 1759352 [VXX/30525]
Blank Lab ID: 1385684

Matrix: Soil/Solid (dry weight)

QC for Samples:

1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006, 1172456007

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS16742
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 5/18/2017 10:43:00AM

Prep Batch: VXX30525
Prep Method: SW5035A
Prep Date/Time: 5/18/2017 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 05/26/2017 4:27:51PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172456 [VXX30525]

Blank Spike Lab ID: 1385685

Date Analyzed: 05/18/2017 14:11

Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006, 1172456007

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	750	792	106	(78-125)
1,1,1-Trichloroethane	750	785	105	(73-130)
1,1,2,2-Tetrachloroethane	750	773	103	(70-124)
1,1,2-Trichloroethane	750	751	100	(78-121)
1,1-Dichloroethane	750	721	96	(76-125)
1,1-Dichloroethene	750	809	108	(70-131)
1,1-Dichloropropene	750	769	103	(76-125)
1,2,3-Trichlorobenzene	750	692	92	(66-130)
1,2,3-Trichloropropane	750	759	101	(73-125)
1,2,4-Trichlorobenzene	750	736	98	(67-129)
1,2,4-Trimethylbenzene	750	741	99	(75-123)
1,2-Dibromo-3-chloropropane	750	828	110	(61-132)
1,2-Dibromoethane	750	760	101	(78-122)
1,2-Dichlorobenzene	750	740	99	(78-121)
1,2-Dichloroethane	750	701	93	(73-128)
1,2-Dichloropropane	750	776	104	(76-123)
1,3,5-Trimethylbenzene	750	745	99	(73-124)
1,3-Dichlorobenzene	750	735	98	(77-121)
1,3-Dichloropropane	750	734	98	(77-121)
1,4-Dichlorobenzene	750	753	100	(75-120)
2,2-Dichloropropane	750	1050	140	* (67-133)
2-Butanone (MEK)	2250	2140	95	(51-148)
2-Chlorotoluene	750	751	100	(75-122)
2-Hexanone	2250	2280	101	(53-145)
4-Chlorotoluene	750	764	102	(72-124)
4-Isopropyltoluene	750	790	105	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2270	101	(65-135)
Benzene	750	751	100	(77-121)
Bromobenzene	750	752	100	(78-121)
Bromochloromethane	750	765	102	(78-125)
Bromodichloromethane	750	833	111	(75-127)
Bromoform	750	782	104	(67-132)
Bromomethane	750	779	104	(53-143)
Carbon disulfide	1130	1520	135	* (63-132)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1172456 [VXX30525]

Blank Spike Lab ID: 1385685

Date Analyzed: 05/18/2017 14:11

Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006, 1172456007

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Carbon tetrachloride	750	854	114	(70-135)
Chlorobenzene	750	729	97	(79-120)
Chloroethane	750	670	89	(59-139)
Chloroform	750	741	99	(78-123)
Chloromethane	750	657	88	(50-136)
cis-1,2-Dichloroethene	750	736	98	(77-123)
cis-1,3-Dichloropropene	750	870	116	(74-126)
Dibromochloromethane	750	788	105	(74-126)
Dibromomethane	750	726	97	(78-125)
Dichlorodifluoromethane	750	761	101	(29-149)
Ethylbenzene	750	742	99	(76-122)
Freon-113	1130	1270	113	(66-136)
Hexachlorobutadiene	750	775	103	(61-135)
Isopropylbenzene (Cumene)	750	755	101	(68-134)
Methylene chloride	750	866	116	(70-128)
Methyl-t-butyl ether	1130	1170	104	(73-125)
Naphthalene	750	708	94	(62-129)
n-Butylbenzene	750	825	110	(70-128)
n-Propylbenzene	750	777	104	(73-125)
o-Xylene	750	735	98	(77-123)
P & M -Xylene	1500	1470	98	(77-124)
sec-Butylbenzene	750	782	104	(73-126)
Styrene	750	743	99	(76-124)
tert-Butylbenzene	750	758	101	(73-125)
Tetrachloroethene	750	734	98	(73-128)
Toluene	750	710	95	(77-121)
trans-1,2-Dichloroethene	750	750	100	(74-125)
trans-1,3-Dichloropropene	750	849	113	(71-130)
Trichloroethene	750	770	103	(77-123)
Trichlorofluoromethane	750	1010	135	(62-140)
Vinyl acetate	750	1180	158	* (50-151)
Vinyl chloride	750	754	101	(56-135)
Xylenes (total)	2250	2210	98	(78-124)

Print Date: 05/26/2017 4:27:52PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172456 [VXX30525]
 Blank Spike Lab ID: 1385685
 Date Analyzed: 05/18/2017 14:11

Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006, 1172456007

Results by SW8260C

Parameter	Blank Spike (%)			CL
	Spike	Result	Rec (%)	
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	99.6	100	(71-136)
4-Bromofluorobenzene (surr)	750	99.3	99	(55-151)
Toluene-d8 (surr)	750	97	97	(85-116)

Batch Information

Analytical Batch: **VMS16742**
 Analytical Method: **SW8260C**
 Instrument: **VQA 7890/5975 GC/MS**
 Analyst: **NRB**

Prep Batch: **VXX30525**
 Prep Method: **SW5035A**
 Prep Date/Time: **05/18/2017 00:30**
 Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1385880
 MS Sample ID: 1385725 MS
 MSD Sample ID: 1385726 MSD

Analysis Date: 05/18/2017 18:11
 Analysis Date: 05/18/2017 16:11
 Analysis Date: 05/18/2017 16:29
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006, 1172456007

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	5.70U	427	451	106	427	473	111	78-125	4.70	(< 20)
1,1,1-Trichloroethane	7.10U	427	434	102	427	430	101	73-130	0.95	(< 20)
1,1,2,2-Tetrachloroethane	3.56U	427	434	102	427	448	105	70-124	3.20	(< 20)
1,1,2-Trichloroethane	2.85U	427	427	100	427	439	103	78-121	2.80	(< 20)
1,1-Dichloroethane	7.10U	427	400	94	427	397	93	76-125	0.70	(< 20)
1,1-Dichloroethene	7.10U	427	446	105	427	442	103	70-131	1.00	(< 20)
1,1-Dichloropropene	7.10U	427	424	99	427	422	99	76-125	0.43	(< 20)
1,2,3-Trichlorobenzene	14.3U	427	392	92	427	429	100	66-130	9.00	(< 20)
1,2,3-Trichloropropane	7.10U	427	428	100	427	450	105	73-125	5.10	(< 20)
1,2,4-Trichlorobenzene	7.10U	427	417	98	427	438	103	67-129	4.80	(< 20)
1,2,4-Trimethylbenzene	14.3U	427	420	98	427	415	97	75-123	1.10	(< 20)
1,2-Dibromo-3-chloropropane	28.4U	427	470	110	427	490	115	61-132	4.00	(< 20)
1,2-Dibromoethane	2.85U	427	434	102	427	441	103	78-122	1.50	(< 20)
1,2-Dichlorobenzene	7.10U	427	409	96	427	408	96	78-121	0.21	(< 20)
1,2-Dichloroethane	2.85U	427	389	91	427	388	91	73-128	0.29	(< 20)
1,2-Dichloropropane	2.85U	427	433	101	427	429	101	76-123	0.84	(< 20)
1,3,5-Trimethylbenzene	7.10U	427	423	99	427	416	98	73-124	1.60	(< 20)
1,3-Dichlorobenzene	7.10U	427	414	97	427	403	95	77-121	2.50	(< 20)
1,3-Dichloropropane	2.85U	427	417	98	427	425	100	77-121	1.90	(< 20)
1,4-Dichlorobenzene	7.10U	427	425	100	427	410	96	75-120	3.50	(< 20)
2,2-Dichloropropane	7.10U	427	616	144 *	427	471	110	67-133	26.60 *	(< 20)
2-Butanone (MEK)	71.0U	1280	1200	94	1280	1330	104	51-148	10.40	(< 20)
2-Chlorotoluene	7.10U	427	426	100	427	408	96	75-122	4.30	(< 20)
2-Hexanone	28.4U	1280	1320	103	1280	1430	112	53-145	8.10	(< 20)
4-Chlorotoluene	7.10U	427	432	101	427	416	97	72-124	3.90	(< 20)
4-Isopropyltoluene	11.4J	427	456	104	427	434	99	73-127	4.80	(< 20)
4-Methyl-2-pentanone (MIBK)	71.0U	1280	1290	101	1280	1370	107	65-135	6.30	(< 20)
Benzene	3.56U	427	414	97	427	414	97	77-121	0.12	(< 20)
Bromobenzene	7.10U	427	420	99	427	411	96	78-121	2.20	(< 20)
Bromochloromethane	7.10U	427	426	100	427	395	92	78-125	7.70	(< 20)
Bromodichloromethane	7.10U	427	466	109	427	461	108	75-127	0.96	(< 20)
Bromoform	7.10U	427	456	107	427	463	108	67-132	1.50	(< 20)
Bromomethane	57.0U	427	425	100	427	420	98	53-143	1.10	(< 20)
Carbon disulfide	28.4U	640	829	129	640	817	128	63-132	1.50	(< 20)
Carbon tetrachloride	3.56U	427	472	110	427	467	109	70-135	1.00	(< 20)
Chlorobenzene	7.10U	427	410	96	427	421	99	79-120	2.80	(< 20)
Chloroethane	57.0U	427	380	89	427	388	91	59-139	2.30	(< 20)

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Matrix Spike Summary

Original Sample ID: 1385880
 MS Sample ID: 1385725 MS
 MSD Sample ID: 1385726 MSD

Analysis Date: 05/18/2017 18:11
 Analysis Date: 05/18/2017 16:11
 Analysis Date: 05/18/2017 16:29
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006, 1172456007

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroform	7.10U	427	410	96	427	409	96	78-123	0.15	(< 20)
Chloromethane	7.10U	427	347	81	427	308	72	50-136	11.70	(< 20)
cis-1,2-Dichloroethene	7.10U	427	406	95	427	412	97	77-123	1.50	(< 20)
cis-1,3-Dichloropropene	3.56U	427	493	116	427	474	111	74-126	4.00	(< 20)
Dibromochloromethane	7.10U	427	451	106	427	452	106	74-126	0.34	(< 20)
Dibromomethane	7.10U	427	406	95	427	400	94	78-125	1.40	(< 20)
Dichlorodifluoromethane	14.3U	427	374	88	427	364	85	29-149	2.70	(< 20)
Ethylbenzene	7.10U	427	420	98	427	417	98	76-122	0.74	(< 20)
Freon-113	28.4U	640	706	110	640	699	109	66-136	1.00	(< 20)
Hexachlorobutadiene	5.70U	427	438	103	427	439	103	61-135	0.26	(< 20)
Isopropylbenzene (Cumene)	7.10U	427	426	100	427	413	97	68-134	3.10	(< 20)
Methylene chloride	28.4U	427	487	114	427	486	114	70-128	0.33	(< 20)
Methyl-t-butyl ether	28.4U	640	646	101	640	643	100	73-125	0.52	(< 20)
Naphthalene	7.10U	427	406	95	427	453	106	62-129	10.80	(< 20)
n-Butylbenzene	7.10U	427	468	110	427	450	105	70-128	3.80	(< 20)
n-Propylbenzene	7.10U	427	438	103	427	415	97	73-125	5.20	(< 20)
o-Xylene	7.10U	427	419	98	427	410	96	77-123	2.10	(< 20)
P & M -Xylene	14.3U	854	828	97	854	821	96	77-124	0.95	(< 20)
sec-Butylbenzene	7.10U	427	430	101	427	415	97	73-126	3.60	(< 20)
Styrene	7.10U	427	423	99	427	414	97	76-124	2.20	(< 20)
tert-Butylbenzene	7.10U	427	427	100	427	408	96	73-125	4.60	(< 20)
Tetrachloroethene	3.56U	427	410	96	427	430	101	73-128	4.90	(< 20)
Toluene	18.4	427	411	92	427	425	95	77-121	3.40	(< 20)
trans-1,2-Dichloroethene	7.10U	427	412	97	427	409	96	74-125	0.61	(< 20)
trans-1,3-Dichloropropene	3.56U	427	497	117	427	489	114	71-130	1.80	(< 20)
Trichloroethene	2.85U	427	425	100	427	422	99	77-123	0.70	(< 20)
Trichlorofluoromethane	14.3U	427	589	138	427	431	101	62-140	30.90	* (< 20)
Vinyl acetate	28.4U	427	686	161 *	427	643	151	50-151	6.40	(< 20)
Vinyl chloride	2.85U	427	398	93	427	391	92	56-135	1.70	(< 20)
Xylenes (total)	21.4U	1280	1250	97	1280	1230	96	78-124	1.30	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		427	424	99	427	413	97	71-136	2.50	
4-Bromofluorobenzene (surr)		712	462	65	712	447	63	55-151	3.40	
Toluene-d8 (surr)		427	415	97	427	432	101	85-116	4.20	

Print Date: 05/26/2017 4:27:53PM

Matrix Spike Summary

Original Sample ID: 1385880
 MS Sample ID: 1385725 MS
 MSD Sample ID: 1385726 MSD

Analysis Date:
 Analysis Date: 05/18/2017 16:11
 Analysis Date: 05/18/2017 16:29
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006, 1172456007

Results by SW8260C

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS16742
 Analytical Method: SW8260C
 Instrument: VQA 7890/5975 GC/MS
 Analyst: NRB
 Analytical Date/Time: 5/18/2017 4:11:00PM

Prep Batch: VXX30525
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 5/18/2017 12:30:00AM
 Prep Initial Wt./Vol.: 87.84g
 Prep Extract Vol: 25.00mL

Print Date: 05/26/2017 4:27:53PM

Method Blank

Blank ID: MB for HBN 1759355 [VXX/30526]

Blank Lab ID: 1385689

QC for Samples:

1172456007

Matrix: Soil/Solid (dry weight)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	98.6	50-150		%

Batch Information

Analytical Batch: VFC13642

Analytical Method: AK101

Instrument: Agilent 7890A PID/FID

Analyst: ST

Analytical Date/Time: 5/19/2017 3:54:00PM

Prep Batch: VXX30526

Prep Method: SW5035A

Prep Date/Time: 5/19/2017 8:00:00AM

Prep Initial Wt./Vol.: 50 g

Prep Extract Vol: 25 mL

Print Date: 05/26/2017 4:27:55PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172456 [VXX30526]
 Blank Spike Lab ID: 1385692
 Date Analyzed: 05/19/2017 14:57

Spike Duplicate ID: LCSD for HBN 1172456 [VXX30526]
 Spike Duplicate Lab ID: 1385693
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456007

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	12.0	96	12.5	12.4	99	(60-120)	3.20	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	1.25	102	102	1.25	101	101	(50-150)	1.70	
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Batch Information

Analytical Batch: **VFC13642**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX30526**
 Prep Method: **SW5035A**
 Prep Date/Time: **05/19/2017 08:00**
 Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Print Date: 05/26/2017 4:27:57PM

Method Blank

Blank ID: MB for HBN 1759486 [VXX/30534]
Blank Lab ID: 1385975

Matrix: Soil/Solid (dry weight)

QC for Samples:
1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	99.4	50-150		%

Batch Information

Analytical Batch: VFC13644
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 5/22/2017 1:02:00PM

Prep Batch: VXX30534
Prep Method: SW5035A
Prep Date/Time: 5/22/2017 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 05/26/2017 4:27:59PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172456 [VXX30534]
 Blank Spike Lab ID: 1385978
 Date Analyzed: 05/22/2017 12:05

Spike Duplicate ID: LCSD for HBN 1172456 [VXX30534]
 Spike Duplicate Lab ID: 1385979
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	12.2	98	12.5	11.9	95	(60-120)	3.10	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	1.25	103	103	1.25	101	101	(50-150)	1.60	
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Batch Information

Analytical Batch: **VFC13644**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX30534**
 Prep Method: **SW5035A**
 Prep Date/Time: **05/22/2017 08:00**
 Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Print Date: 05/26/2017 4:28:01PM

Method Blank

Blank ID: MB for HBN 1759685 [VXX/30544]
 Blank Lab ID: 1386634

Matrix: Soil/Solid (dry weight)

QC for Samples:
 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	103	71-136		%
4-Bromofluorobenzene (surr)	94.2	55-151		%
Toluene-d8 (surr)	95.5	85-116		%

Batch Information

Analytical Batch: VMS16752
 Analytical Method: SW8260C
 Instrument: VQA 7890/5975 GC/MS
 Analyst: TJT
 Analytical Date/Time: 5/24/2017 12:14:00PM

Prep Batch: VXX30544
 Prep Method: SW5035A
 Prep Date/Time: 5/24/2017 6:00:00AM
 Prep Initial Wt./Vol.: 50 g
 Prep Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172456 [VXX30544]

Blank Spike Lab ID: 1386635

Date Analyzed: 05/24/2017 13:50

Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Results by SW8260C

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1,2,4-Trimethylbenzene	750	724	97	(75-123)
1,3,5-Trimethylbenzene	750	722	96	(73-124)
Naphthalene	750	703	94	(62-129)
o-Xylene	750	732	98	(77-123)
P & M -Xylene	1500	1450	97	(77-124)
Xylenes (total)	2250	2180	97	(78-124)

Surrogates

1,2-Dichloroethane-D4 (surr)	750	97.1	97	(71-136)
4-Bromofluorobenzene (surr)	750	95.3	95	(55-151)
Toluene-d8 (surr)	750	98.5	99	(85-116)

Batch Information

Analytical Batch: VMS16752

Analytical Method: SW8260C

Instrument: VQA 7890/5975 GC/MS

Analyst: TJT

Prep Batch: VXX30544

Prep Method: SW5035A

Prep Date/Time: 05/24/2017 06:00

Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1172574002
 MS Sample ID: 1386636 MS
 MSD Sample ID: 1386637 MSD

Analysis Date: 05/24/2017 20:01
 Analysis Date: 05/24/2017 18:36
 Analysis Date: 05/24/2017 18:53
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)						
		Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL	
1,2,4-Trimethylbenzene	469	534	698	43 *	534	688	41 *	75-123	1.30	(< 20)	
1,3,5-Trimethylbenzene	808	534	865	11 *	534	866	11 *	73-124	0.21	(< 20)	
Naphthalene	884	534	923	7 *	534	1045	30 *	62-129	12.40	(< 20)	
o-Xylene	922	534	960	7 *	534	995	14 *	77-123	3.60	(< 20)	
P & M -Xylene	342	1069	1095	71 *	1069	1132	74 *	77-124	3.30	(< 20)	
Xylenes (total)	1260	1601	2052	49 *	1601	2123	54 *	78-124	3.50	(< 20)	
Surrogates											
1,2-Dichloroethane-D4 (surr)		534	504	94	534	503	94	71-136	0.14		
4-Bromofluorobenzene (surr)		891	727	82	891	738	83	55-151	1.50		
Toluene-d8 (surr)		534	522	98	534	531	100	85-116	1.80		

Batch Information

Analytical Batch: VMS16752
 Analytical Method: SW8260C
 Instrument: VQA 7890/5975 GC/MS
 Analyst: TJT
 Analytical Date/Time: 5/24/2017 6:36:00PM

Prep Batch: VXX30544
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 5/24/2017 6:00:00AM
 Prep Initial Wt./Vol.: 83.25g
 Prep Extract Vol: 25.00mL

Method Blank

Blank ID: MB for HBN 1759695 [VXX/30545]
 Blank Lab ID: 1386680

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1172456008, 1172456009, 1172456010, 1172456011, 1172456012, 1172456013

Results by SW8260C TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.000200U	0.000400	0.000120	mg/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	106	81-118		%
4-Bromofluorobenzene (surr)	101	85-114		%
Toluene-d8 (surr)	98.2	89-112		%

Batch Information

Analytical Batch: VMS16753
 Analytical Method: SW8260C TCLP
 Instrument: VSA Agilent GC/MS 7890B/5977A
 Analyst: TJT
 Analytical Date/Time: 5/24/2017 4:28:00PM

Prep Batch: VXX30545
 Prep Method: SW5030B
 Prep Date/Time: 5/24/2017 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Leaching Blank

Blank ID: LB for HBN 1759403 [TCLP/8853]
 Blank Lab ID: 1385881

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1172456008, 1172456009, 1172456010, 1172456011, 1172456012, 1172456013

Results by SW8260C TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.0100U	0.0200	0.00600	mg/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	102	81-118		%
4-Bromofluorobenzene (surr)	99.5	85-114		%
Toluene-d8 (surr)	99.1	89-112		%

Batch Information

Analytical Batch: VMS16753
 Analytical Method: SW8260C TCLP
 Instrument: VSA Agilent GC/MS 7890B/5977A
 Analyst: TJT
 Analytical Date/Time: 5/24/2017 8:05:00PM

Prep Batch: VXX30545
 Prep Method: SW5030B
 Prep Date/Time: 5/24/2017 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172456 [VXX30545]
 Blank Spike Lab ID: 1386681
 Date Analyzed: 05/24/2017 16:45

Spike Duplicate ID: LCSD for HBN 1172456 [VXX30545]
 Spike Duplicate Lab ID: 1386682
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172456008, 1172456009, 1172456010, 1172456011, 1172456012, 1172456013

Results by SW8260C TCLP

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	0.0300	0.0291	97	0.0300	0.0304	101	(79-120)	4.40	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	0.0300	102	102	0.0300	101	101	(81-118)	0.46	
4-Bromofluorobenzene (surr)	0.0300	101	101	0.0300	99.3	99	(85-114)	1.20	
Toluene-d8 (surr)	0.0300	99.2	99	0.0300	97.8	98	(89-112)	1.40	

Batch Information

Analytical Batch: **VMS16753**
 Analytical Method: **SW8260C TCLP**
 Instrument: **VSA Agilent GC/MS 7890B/5977A**
 Analyst: **TJT**

Prep Batch: **VXX30545**
 Prep Method: **SW5030B**
 Prep Date/Time: **05/24/2017 06:00**
 Spike Init Wt./Vol.: 0.0300 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 0.0300 mg/L Extract Vol: 5 mL

Matrix Spike Summary

Original Sample ID: 1172520001
 MS Sample ID: 1386963 MS
 MSD Sample ID: 1386964 MSD

Analysis Date: 05/24/2017 23:34
 Analysis Date: 05/24/2017 18:21
 Analysis Date: 05/24/2017 18:38
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172456008, 1172456009, 1172456010, 1172456011, 1172456012, 1172456013

Results by SW8260C TCLP

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	0.00138	0.0300	0.0309	99	0.0300	0.0310	99	79-120	0.13	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		0.0300	0.0303	101	0.0300	0.0301	100	81-118	0.86	
4-Bromofluorobenzene (surr)		0.0300	0.0295	98	0.0300	0.0299	100	85-114	1.40	
Toluene-d8 (surr)		0.0300	0.0296	99	0.0300	0.0294	98	89-112	0.61	

Batch Information

Analytical Batch: VMS16753
 Analytical Method: SW8260C TCLP
 Instrument: VSA Agilent GC/MS 7890B/5977A
 Analyst: TJT
 Analytical Date/Time: 5/24/2017 6:21:00PM

Prep Batch: VXX30545
 Prep Method: Volatiles Extraction 8240/8260 FULL
 Prep Date/Time: 5/24/2017 6:00:00AM
 Prep Initial Wt./Vol.: 5.00mL
 Prep Extract Vol: 5.00mL

Method Blank

Blank ID: MB for HBN 1759209 [XXX/37378]
 Blank Lab ID: 1385390

Matrix: Soil/Solid (dry weight)

QC for Samples:
 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	97.3	60-120		%

Batch Information

Analytical Batch: XFC13350
 Analytical Method: AK102
 Instrument: Agilent 7890B F
 Analyst: KMD
 Analytical Date/Time: 5/20/2017 1:26:00PM

Prep Batch: XXX37378
 Prep Method: SW3550C
 Prep Date/Time: 5/19/2017 9:29:03AM
 Prep Initial Wt./Vol.: 30 g
 Prep Extract Vol: 1 mL

Print Date: 05/26/2017 4:28:14PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172456 [XXX37378]
 Blank Spike Lab ID: 1385391
 Date Analyzed: 05/20/2017 13:36

Spike Duplicate ID: LCSD for HBN 1172456
 [XXX37378]
 Spike Duplicate Lab ID: 1385392
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Diesel Range Organics	167	183	110	167	181	109	(75-125)	1.20	(< 20)	
Surrogates										
5a Androstane (surr)	3.33	104	104	3.33	103	103	(60-120)	0.50		

Batch Information

Analytical Batch: **XFC13350**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **KMD**

Prep Batch: **XXX37378**
 Prep Method: **SW3550C**
 Prep Date/Time: **05/19/2017 09:29**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1759209 [XXX/37378]
Blank Lab ID: 1385390

Matrix: Soil/Solid (dry weight)

QC for Samples:
1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62 (surr)	97.6	60-120		%

Batch Information

Analytical Batch: XFC13350
Analytical Method: AK103
Instrument: Agilent 7890B F
Analyst: KMD
Analytical Date/Time: 5/20/2017 1:26:00PM

Prep Batch: XXX37378
Prep Method: SW3550C
Prep Date/Time: 5/19/2017 9:29:03AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 05/26/2017 4:28:17PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172456 [XXX37378]
 Blank Spike Lab ID: 1385391
 Date Analyzed: 05/20/2017 13:36

Spike Duplicate ID: LCSD for HBN 1172456
 [XXX37378]
 Spike Duplicate Lab ID: 1385392
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456001, 1172456002, 1172456003, 1172456004, 1172456005, 1172456006

Results by AK103

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Residual Range Organics	167	170	102	167	170	102	(60-120)	0.01	(< 20)	
Surrogates										
n-Triacontane-d62 (surr)	3.33	102	102	3.33	104	104	(60-120)	1.70		

Batch Information

Analytical Batch: **XFC13350**
 Analytical Method: **AK103**
 Instrument: **Agilent 7890B F**
 Analyst: **KMD**

Prep Batch: **XXX37378**
 Prep Method: **SW3550C**
 Prep Date/Time: **05/19/2017 09:29**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1759306 [XXX/37385]
 Blank Lab ID: 1385487

Matrix: Soil/Solid (dry weight)

QC for Samples:
 1172456006

Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	12.5U	25.0	7.50	ug/Kg
2-Methylnaphthalene	12.5U	25.0	7.50	ug/Kg
Acenaphthene	12.5U	25.0	7.50	ug/Kg
Acenaphthylene	12.5U	25.0	7.50	ug/Kg
Anthracene	12.5U	25.0	7.50	ug/Kg
Benzo(a)Anthracene	12.5U	25.0	7.50	ug/Kg
Benzo[a]pyrene	12.5U	25.0	7.50	ug/Kg
Benzo[b]Fluoranthene	12.5U	25.0	7.50	ug/Kg
Benzo[g,h,i]perylene	12.5U	25.0	7.50	ug/Kg
Benzo[k]fluoranthene	12.5U	25.0	7.50	ug/Kg
Chrysene	12.5U	25.0	7.50	ug/Kg
Dibenzo[a,h]anthracene	12.5U	25.0	7.50	ug/Kg
Fluoranthene	12.5U	25.0	7.50	ug/Kg
Fluorene	12.5U	25.0	7.50	ug/Kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	7.50	ug/Kg
Naphthalene	10.0U	20.0	6.00	ug/Kg
Phenanthrene	12.5U	25.0	7.50	ug/Kg
Pyrene	12.5U	25.0	7.50	ug/Kg
Surrogates				
2-Fluorobiphenyl (surr)	89.3	46-115		%
Terphenyl-d14 (surr)	104	58-133		%

Batch Information

Analytical Batch: XMS10043
 Analytical Method: 8270D SIM (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: S.G
 Analytical Date/Time: 5/25/2017 2:09:00AM

Prep Batch: XXX37385
 Prep Method: SW3550C
 Prep Date/Time: 5/19/2017 11:41:48AM
 Prep Initial Wt./Vol.: 22.5 g
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172456 [XXX37385]
 Blank Spike Lab ID: 1385488
 Date Analyzed: 05/25/2017 13:33

Spike Duplicate ID: LCSD for HBN 1172456
 [XXX37385]
 Spike Duplicate Lab ID: 1385501
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456006

Results by 8270D SIM (PAH)

Parameter	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	111	93.7	84	111	94.0	85	(43-111)	0.32	(< 20)
2-Methylnaphthalene	111	88.1	79	111	89.4	80	(39-114)	1.40	(< 20)
Acenaphthene	111	117	106	111	119	107	(44-111)	1.10	(< 20)
Acenaphthylene	111	97.2	88	111	98.2	88	(39-116)	1.10	(< 20)
Anthracene	111	100	90	111	102	92	(50-114)	1.70	(< 20)
Benzo(a)Anthracene	111	97.2	87	111	97.5	88	(54-122)	0.37	(< 20)
Benzo[a]pyrene	111	99.4	90	111	99.0	89	(50-125)	0.44	(< 20)
Benzo[b]Fluoranthene	111	98.6	89	111	98.1	88	(53-128)	0.45	(< 20)
Benzo[g,h,i]perylene	111	97.9	88	111	96.3	87	(49-127)	1.70	(< 20)
Benzo[k]fluoranthene	111	96.1	86	111	94.7	85	(56-123)	1.40	(< 20)
Chrysene	111	98.4	89	111	99.1	89	(57-118)	0.75	(< 20)
Dibenzo[a,h]anthracene	111	101	91	111	100	90	(50-129)	0.72	(< 20)
Fluoranthene	111	95.5	86	111	97.4	88	(55-119)	1.90	(< 20)
Fluorene	111	96.3	87	111	98.0	88	(47-114)	1.70	(< 20)
Indeno[1,2,3-c,d] pyrene	111	98.9	89	111	98.1	88	(49-130)	0.78	(< 20)
Naphthalene	111	88.2	79	111	89.6	81	(38-111)	1.50	(< 20)
Phenanthrene	111	94.2	85	111	95.2	86	(49-113)	1.00	(< 20)
Pyrene	111	98.8	89	111	101	91	(55-117)	1.80	(< 20)
Surrogates									
2-Fluorobiphenyl (surr)	111	92.9	93	111	93.3	93	(46-115)	0.44	
Terphenyl-d14 (surr)	111	94.8	95	111	95.7	96	(58-133)	0.99	

Batch Information

Analytical Batch: XMS10050
 Analytical Method: 8270D SIM (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: S.G

Prep Batch: XXX37385
 Prep Method: SW3550C
 Prep Date/Time: 05/19/2017 11:41
 Spike Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL

Matrix Spike Summary

Original Sample ID: 1172456006
 MS Sample ID: 1385489 MS
 MSD Sample ID: 1385490 MSD

Analysis Date: 05/25/2017 3:52
 Analysis Date: 05/25/2017 4:13
 Analysis Date: 05/25/2017 4:33
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1172456006

Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	630	114	753	107	116	762	114 *	44-111	1.30	(< 20)
Acenaphthylene	260U	114	276J	242 *	116	283J	243 *	39-116	2.00	(< 20)
Anthracene	197J	114	307J	96	116	306J	94	50-114	0.09	(< 20)
Benzo(a)Anthracene	349J	114	475J	110	116	473J	107	54-122	0.33	(< 20)
Benzo[a]pyrene	260U	114	214J	187 *	116	223J	192 *	50-125	4.30	(< 20)
Benzo[b]Fluoranthene	296J	114	405J	96	116	395J	85	53-128	2.80	(< 20)
Benzo[g,h,i]perylene	260U	114	260U	0 *	116	260U	0 *	49-127	0.00	(< 20)
Benzo[k]fluoranthene	260U	114	181J	159 *	116	210J	181 *	56-123	14.60	(< 20)
Chrysene	499J	114	625	111	116	618	102	57-118	1.30	(< 20)
Dibenzo[a,h]anthracene	260U	114	260U	0 *	116	260U	0 *	50-129	0.00	(< 20)
Fluoranthene	888	114	1120	199 *	116	1110	190 *	55-119	0.60	(< 20)
Fluorene	1410	114	1466	49	116	1487	64	47-114	1.30	(< 20)
Indeno[1,2,3-c,d] pyrene	260U	114	260U	0 *	116	260U	0 *	49-130	0.00	(< 20)
Phenanthrene	2160	114	2304	130 *	116	2262	91	49-113	1.90	(< 20)
Pyrene	867	114	1099	203 *	116	1089	194 *	55-117	0.67	(< 20)
1-Methylnaphthalene	13800	114	13927	175 *	116	13508	-222 *	43-111	3.30	(< 20)
2-Methylnaphthalene	17400	114	17382	-18 *	116	17068	-312 *	39-114	2.00	(< 20)
Naphthalene	12700	114	12356	-378 *	116	12042	-595 *	38-111	2.10	(< 20)
Surrogates										
2-Fluorobiphenyl (surr)		114	107	93	116	115	99	46-115	7.50	
Terphenyl-d14 (surr)		114	120	105	116	128	110	58-133	6.30	

Batch Information

Analytical Batch: XMS10043
 Analytical Method: 8270D SIM (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: S.G
 Analytical Date/Time: 5/25/2017 4:13:00AM

Prep Batch: XXX37385
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
 Prep Date/Time: 5/19/2017 11:41:48AM
 Prep Initial Wt./Vol.: 22.86g
 Prep Extract Vol: 5.00mL

Analytical Batch: XMS10050
 Analytical Method: 8270D SIM (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: S.G
 Analytical Date/Time: 5/25/2017 2:34:00PM

Prep Batch: XXX37385
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
 Prep Date/Time: 5/19/2017 11:41:48AM
 Prep Initial Wt./Vol.: 22.86g
 Prep Extract Vol: 5.00mL

Print Date: 05/26/2017 4:28:25PM

1172456



SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Laboratory SGS
Attn: TOU

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

2705 Saint Andrews Loop, Suite A
Pasco, WA 99301-3378
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

3990 Collins Way, Suite 100
Lake Oswego, OR 97035
(503) 223-6147

1321 Bannock Street, Suite 200
Denver, CO 80204
(303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp. Grab	GR0 / VOCs	AR101 / 8260C	DR0 / 8260	AR102 / 82103	TCLP Benzene	1311 / 8260	PAH	8270D-SIM	Total Number of Containers	Remarks/Matrix	
17863 - B1S1	①A-B ①A	12:03	5/17/17	✓	X	X	X						3	Soil Samples	
- B2S1	②A-B ②A	11:37	↓	✓	X	X	X						3	↓	
- B3S1	③A-B ③A	11:01		✓	X	X	X						3		
- B4S1	④A-B ④A	10:37		✓	X	X	X						3		
- B5S1	⑤A-B ⑤A	09:28		✓	X	X	X						3		
- B6S1	⑥A-B ⑥A	11:20		✓	X	X	X	X					3		
- STB	⑦A	11:00			X								1		LAB TRIP BLANK

Project Information		Sample Receipt	
Project Number: <u>32-1-17863</u>	Total Number of Containers		
Project Name: <u>459 BLUFF ROAD</u>	COC Seals/Intact? Y/N/NA		
Contact: <u>TWC</u>	Received Good Cond./Cold		
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method:		
Sampler: <u>TWC</u>	(attach shipping bill, if any)		

Instructions
Requested Turnaround Time: <u>STANDARD</u>
Special Instructions: <u>USUAL II DELIVERABLES</u>

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Signature: <u>[Signature]</u>	Time: <u>16:04</u>	Signature:	Time:	Signature:	Time:
Printed Name: <u>TRAVON CROSSBY</u>	Date: <u>5/17/17</u>	Printed Name:	Date:	Printed Name:	Date:
Company: <u>SW</u>		Company:		Company:	
Received By: 1.		Received By: 2.		Received By: 3.	
Signature:	Time:	Signature:	Time:	Signature: <u>[Signature]</u>	Time: <u>16:04</u>
Printed Name:	Date:	Printed Name:	Date:	Printed Name: <u>ANNIE COLLIE</u>	Date: <u>5/17/17</u>
Company:		Company:		Company: <u>SGS TB 4.2 #D26 CS Absent H.D</u>	



Characterization of TCLP Samples for LIMS Login

Date Characterized: 5/18/17

Analyst: NCW

Sample Container ID:	Matrix	%	Is sufficient volume/mass available?	Notes:
8A 9A 10A 11A 12A 13A	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample ***? Yes / No / NA Sample description/other observations: Soil
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100%		
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample ***? Yes / No / NA Sample description/other observations:
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample ***? Yes / No / NA Sample description/other observations:
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample ***? Yes / No / NA Sample description/other observations:
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample ***? Yes / No / NA Sample description/other observations:
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			

Remember: * = Chlorinated oils will be heavier than water and present as the bottom later.
** = Oils must be filterable to be logged in as matrix 3. Nonfilterable oils must be logged in as matrix 7.
*** = Refer to F078 'Characterization of TCLP Samples for LIMS' to determine if there's sufficient volume/mass.



Returned Bottles Inventory

Name of individual returning bottles:

Trevor Crosby

Date Received:

5/17/17

Client Name:

Shannon & Wilson

Received by:

ARC

Project Name:

459 Bluff Road

SGS PM:

VLP

HDPE/Nalgene:	1-L	
	500-ml	
	250-ml or 8-oz	
	125-ml or 4-oz	
	60-ml or 2-oz	
	other	
amber glass:	1-L	
	500-ml	
	250-ml or 8-oz	
	125-ml or 4-oz with or without septa	21
	40-ml VOA vial	
	other	
Subtotal:		21

Note: Returned bottles (regardless of size/pres.) are billed back at \$4/bottle unless otherwise quoted.

Amount to Invoice Client \$:

84.00

WO#:

1172456



e-Sample Receipt Form

SGS Workorder #:

1172456



1 1 7 2 4 5 6

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	<input checked="" type="checkbox"/>	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	<input type="checkbox"/> n/a	ABSENT
COC accompanied samples?	<input checked="" type="checkbox"/> yes	
<input type="checkbox"/> n/a	**Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/> yes	Cooler ID: 1 @ 4.2 °C Therm. ID: D26
	<input type="checkbox"/> n/a	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/> n/a	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/> n/a	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/> n/a	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	<input type="checkbox"/> n/a	
If <0°C, were sample containers ice free?	<input type="checkbox"/> n/a	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements	Note: Refer to form F-083 "Sample Guide" for specific holding times.	
Were samples received within holding time?	<input checked="" type="checkbox"/> yes	
Do samples match COC ** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/> yes	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	<input checked="" type="checkbox"/> yes	
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> n/a ***Exemption permitted for metals (e.g.200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/> yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input type="checkbox"/> n/a	
Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="checkbox"/> yes	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		
The client was provided with some septa jars that were not tared. Some of these jars were used for samples. Weights will be determined by the analyst. VLP 5/18/17		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1172456001-A	No Preservative Required	OK			
1172456001-B	Methanol field pres. 4 C	OK			
1172456002-A	No Preservative Required	OK			
1172456002-B	Methanol field pres. 4 C	OK			
1172456003-A	No Preservative Required	OK			
1172456003-B	Methanol field pres. 4 C	OK			
1172456004-A	No Preservative Required	OK			
1172456004-B	Methanol field pres. 4 C	OK			
1172456005-A	No Preservative Required	OK			
1172456005-B	Methanol field pres. 4 C	OK			
1172456006-A	No Preservative Required	OK			
1172456006-B	Methanol field pres. 4 C	OK			
1172456007-A	Methanol field pres. 4 C	OK			
1172456008-A	No Preservative Required	OK			
1172456009-A	No Preservative Required	OK			
1172456010-A	No Preservative Required	OK			
1172456011-A	No Preservative Required	OK			
1172456012-A	No Preservative Required	OK			
1172456013-A	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Environmental Management Plan, 459 Bluff Road, Anchorage, Alaska

Date: June 2017

Laboratory Report Date: May 26, 2017

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Trevor Crosby

Title: Environmental Scientist

Laboratory Name: SGS North America Inc.

Work Order Number: 1172456

ADEC File Number: 2100.38.321

(NOTE: NA = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No / NA (Please explain.)

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS-approved?

Yes / No / **NA**

Comments: *The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.*

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes / No / NA (Please explain.)

Comments:

- b. Correct analyses requested? **Yes** / No / NA (Please explain.)

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ}$ C)?

Yes / No / NA (Please explain.)

Comments: *The temperature blank was documented as 4.2° C.*

- b. Sample preservation acceptable - acidified waters, Methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes** / No / NA (Please explain.)

Comments:

- c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes** / No / NA (Please explain.)

Comments: *The sample receipt form notes that the samples were received in good condition.*

- d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? Yes / **No** / NA (Please explain.)

Comments:

- e. Data quality or usability affected? Yes / **No** (Please Explain.)

Comments: .

4. Case Narrative

- a. Present and understandable? **Yes** / No / NA (Please explain.)

Comments:

- b. Discrepancies, errors or QC failures noted by the lab? **Yes** / No / NA (Please explain.)

Comments: *The case narrative notes that:*

- *GRO/VOC surrogate 4-bromofluorobenzene recovery for each project sample does not meet the QC criteria due to matrix interference.*
- *DRO surrogate 5a-androstane recovery for Project Samples B5S1 and B6S1 do not meet the QC criteria due to dilution (4x) and (40x), respectively.*
- *RRO surrogate n-triacontane recovery for Project Samples B5S1 and B6S1 do not meet the QC criteria due to dilution (4x) and (40x), respectively.*
- *The LCS/LCSD recovery for several VOC analytes do not meet QC criteria. These analytes were not reported above the LOQ in the associated samples.*
- *MS/MSD recoveries for several VOC and PAH analytes do not meet QC criteria. See LCS for accuracy requirements.*

- c. Were corrective actions documented? **Yes** / No / NA (Please explain.)

Comments: *The case narrative does not discuss corrective actions taken.*

- d. What is the effect on data quality/usability, according to the case narrative?

Comments: *The case narrative does not discuss data quality/usability.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes** / No / NA **(Please explain.)**
Comments:
- b. All applicable holding times met? **Yes** / No / NA **(Please explain.)**
Comments:
- c. All soils reported on a dry-weight basis? **Yes** / No / NA **(Please explain.)**
Comments:
- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? **Yes** / No / NA **(Please explain.)**
Comments:
- e. Data quality or usability affected? **(Please explain.)**
Comments: *Data quality/usability is unaffected.*

6. QC Samples

a. Method Blank

- i. One method blank reported per matrix, analysis, and 20 samples?
Yes / No / NA **(Please explain.)**
Comments:
- ii. All method blank results less than LOQ? **Yes** / No / NA **(Please explain.)**
Comments:
- iii. If above LOQ, what samples are affected? *NA*
Comments:
- iv. Do the affected sample(s) have data flags? **Yes** / No / **NA**
Comments:
If so, are the data flags clearly defined? **Yes** / No / **NA**
Comments:
- v. Data quality or usability affected? **(Please explain.)**
Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846) **Yes** / No / NA (Please explain.)
Comments:
- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes** / No / NA (Please explain.)
Comments:
- iii. Accuracy – All percent recoveries (%R) reported *and* within method or laboratory limits? And project specified DQOs, if applicable. (AK petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages) Yes **No** / NA (Please explain.)
Comments:
 - o *The LCS/LCSD recovery for several VOC analytes do not meet QC criteria. These analytes were not reported above the LOQ in the associated samples.*
- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) Yes **No** / NA (Please explain.)
Comments:
- v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: *The affected analyte was not detected in the associated samples; therefore, the project samples are considered unaffected.*
- vi. Do the affected samples(s) have data flags? Yes / No / **NA**
Comments:

If so, are the data flags clearly defined? Yes / No **NA**
Comments:
- vii. Data quality or usability affected? Explain.
Comments: *Data quality/usability are unaffected; see above.*

c. Surrogates - Organics Only

- i. Are surrogate recoveries reported for organic analyses, field, QC, and laboratory samples? **Yes** / No / NA (Please explain.)
Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) Yes / **No** / NA (Please explain.)

Comments:

- *GRO/VOC surrogate 4-bromofluorobenzene recovery for each project sample does not meet the QC criteria due to matrix interference.*
- *DRO surrogate 5a-androstane recovery for Project Samples B5S1 and B6S1 do not meet the QC criteria due to dilution (4x) and (40x), respectively.*
- *RRO surrogate n-triacontane recovery for Project Samples B5S1 and B6S1 do not meet the QC criteria due to dilution (4x) and (40x), respectively.*

- iii. Do the sample results with failed surrogate recoveries have data flags? Yes / **No** / NA (Please explain.)

Comments:

- *Project samples affected by surrogate recovery failures due to matrix interference are flagged “J+” on Table 2 of the report.*

If so, are the data flags clearly defined? Yes / No / **NA**

Comments:

- iv. Data quality or usability affected? Explain.

Comments: *The flagged data are considered estimates biased low or high.*

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

- i. One trip blank reported per matrix, analysis and cooler? **Yes** / No / NA (Please explain.)

Comments: *One water trip blank was submitted to the laboratory with the project samples.*

- ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? Yes / **No** / NA (Please explain if NA or no.)

Comments: *All samples were transported in one cooler.*

- iii. All results less than LOQ? **Yes** / No / NA (Please explain.)

Comments:

- iv. If above LOQ, what samples are affected?

Comments:

- v. Data quality or usability affected? Explain.

Comments: *Data quality/usability is unaffected.*

e. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / **No** / NA (Please explain.)
Comments:
- ii. Were the field duplicates submitted blind to the lab? Yes / **No** / NA (Please explain.)
Comments:
- iii. Precision – All relative percent differences (RPDs) less than specified DQOs?
(Recommended: 30% for water, 50% for soil) Yes / No / **NA** (Please explain.)
Comments:
- iv. Data quality or usability affected? Explain. **NA**
Comments:

f. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below)

- Yes** / No / NA (Please explain.) *An equipment blank was not included in our ADEC-approved work plan.*
- i. All results less than LOQ? Yes / No / **NA** (Please explain.)
Comments:
- ii. If results are above LOQ, what samples are affected? **NA**
Comments:
- iii. Data quality or usability affected? Explain. **NA**
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

- a. Are they defined and appropriate? **Yes** / No / NA
Comments: *Laboratory-specific flags are defined on page 3 of the laboratory report.*

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks Street Suite 3
Anchorage, AK 99518
(907)433-3246

Report Number: **1172455**

Client Project: **32-1-17863 459 Bluff Road**

Dear Trevor Crosby,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Victoria at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



SGS North America Inc.
Environmental Services – Alaska Division
Project Manager

Victoria Pennick

2017.05.25

19:38:11 -08'00'

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1172455**
Project Name/Site: **32-1-17863 459 Bluff Road**
Project Contact: **Trevor Crosby**

Refer to sample receipt form for information on sample condition.

17863-G4 (1172455001) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (84%) does not meet QC criteria due to matrix interference.
AK102/103 - Surrogate recoveries for 5a-androstane (34.3%) and n-triacontane (37.3%) do not meet QC criteria. The sample was re-extracted within hold time with surrogate recoveries for 5a-androstane (20.8%) and n-triacontane (20.3%) which do not meet QC criteria. Results are comparable to those of the associated samples.
8270D SIM - PAH surrogate recovery for terphenyl-d14 (11.5%) and 2-fluorobiphenyl (22.1%) do not meet QC criteria due to sample dilution.

17863-G5 (1172455002) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (121%) does not meet QC criteria due to matrix interference.
AK102/103 - Surrogate recoveries for 5a-androstane (20.2%) and n-triacontane (19.9%) do not meet QC criteria. The sample was re-extracted within hold time with surrogate recoveries for 5a-androstane (35.5%) and n-triacontane (21.8%) which do not meet QC criteria. Results are comparable to those of the associated samples.
8270D SIM - PAH surrogate recovery for terphenyl-d14 (16.9%) and 2-fluorobiphenyl (26.9%) do not meet QC criteria due to sample dilution (5X).

17863-G15 (1172455003) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (195%) does not meet QC criteria due to matrix interference.
AK102/103 - Surrogate recoveries for 5a-androstane (18.7%) and n-triacontane (17.7%) do not meet QC criteria. The sample was re-extracted within hold time with surrogate recoveries for 5a-androstane (33.8%) and n-triacontane (20.6%) which do not meet QC criteria. Results are comparable to those of the associated samples.
8270D SIM - PAH surrogate recovery for terphenyl-d14 (16.7%) and 2-fluorobiphenyl (27%) do not meet QC criteria due to sample dilution (5X).

LCS for HBN 1759388 [VXX/30530 (1385818) LCS

8260C - LCS recovery for vinyl chloride (152%) does not meet QC criteria. This analyte was not reported above the LOQ in the associated samples.

LCSD for HBN 1759388 [VXX/3053 (1385819) LCSD

8260C - LCSD recovery for vinyl chloride (153%) does not meet QC criteria. This analyte was not reported above the LOQ in the associated samples.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
EPA 625M SIM (PAH) LV				
1172455003	17863-G15	XMS10047	Fluoranthene	SP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

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Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) for which SGS North America Inc. is Provisionally Certified as of 2/8/2017 & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
17863-G4	1172455001	05/17/2017	05/17/2017	Water (Surface, Eff., Ground)
17863-G5	1172455002	05/17/2017	05/17/2017	Water (Surface, Eff., Ground)
17863-G15	1172455003	05/17/2017	05/17/2017	Water (Surface, Eff., Ground)
17863-WTB	1172455004	05/17/2017	05/17/2017	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
EPA 625M SIM (PAH) LV	625 PAH SIM GC/MS Low Volume
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
AK101	Gasoline Range Organics (W)
SW8260C	Volatile Organic Compounds (W) FULL

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Detectable Results Summary

Client Sample ID: **17863-G4**

Lab Sample ID: 1172455001

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Acenaphthene	4.91	ug/L
Anthracene	1.39	ug/L
Benzo(a)Anthracene	0.356	ug/L
Benzo[a]pyrene	0.161	ug/L
Benzo[b]Fluoranthene	0.270	ug/L
Benzo[g,h,i]perylene	0.187J	ug/L
Chrysene	0.666	ug/L
Fluoranthene	1.11	ug/L
Fluorene	6.44	ug/L
Naphthalene	1600	ug/L
Phenanthrene	8.58	ug/L
Pyrene	2.04	ug/L
Diesel Range Organics	41.9	mg/L
Residual Range Organics	2.77	mg/L
Gasoline Range Organics	20.1	mg/L
1,2,4-Trimethylbenzene	2410	ug/L
1,2-Dichloroethane	8.12	ug/L
1,3,5-Trimethylbenzene	1590	ug/L
2-Hexanone	13.0	ug/L
4-Isopropyltoluene	76.4	ug/L
Benzene	369	ug/L
Ethylbenzene	176	ug/L
Isopropylbenzene (Cumene)	10.4	ug/L
Naphthalene	819	ug/L
n-Propylbenzene	8.52	ug/L
o-Xylene	2570	ug/L
P & M -Xylene	4250	ug/L
sec-Butylbenzene	9.31	ug/L
tert-Butylbenzene	10.0	ug/L
Toluene	280	ug/L
Xylenes (total)	6810	ug/L

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

Detectable Results Summary

Client Sample ID: **17863-G5**

Lab Sample ID: 1172455002

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Acenaphthene	12.2	ug/L
Anthracene	6.34	ug/L
Benzo(a)Anthracene	1.06	ug/L
Benzo[a]pyrene	0.527	ug/L
Benzo[b]Fluoranthene	0.721	ug/L
Benzo[g,h,i]perylene	0.578	ug/L
Chrysene	1.64	ug/L
Fluoranthene	2.83	ug/L
Fluorene	26.2	ug/L
Indeno[1,2,3-c,d] pyrene	0.230J	ug/L
Naphthalene	1770	ug/L
Phenanthrene	36.0	ug/L
Pyrene	4.75	ug/L
Semivolatile Organic Fuels		
Diesel Range Organics	53.3	mg/L
Residual Range Organics	2.81	mg/L
Volatile Fuels		
Volatile GC/MS		
Gasoline Range Organics	17.1	mg/L
1,2,4-Trimethylbenzene	3800	ug/L
1,3,5-Trimethylbenzene	1120	ug/L
4-Isopropyltoluene	85.0	ug/L
Benzene	444	ug/L
Ethylbenzene	76.0	ug/L
Isopropylbenzene (Cumene)	9.69	ug/L
Naphthalene	654	ug/L
n-Propylbenzene	16.0	ug/L
o-Xylene	1630	ug/L
P & M -Xylene	3880	ug/L
tert-Butylbenzene	13.2	ug/L
Toluene	318	ug/L
Xylenes (total)	5510	ug/L

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Detectable Results Summary

Client Sample ID: **17863-G15**

Lab Sample ID: 1172455003

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Acenaphthene	13.3	ug/L
Anthracene	7.17	ug/L
Benzo(a)Anthracene	1.15	ug/L
Benzo[a]pyrene	0.576	ug/L
Benzo[b]Fluoranthene	0.749	ug/L
Benzo[g,h,i]perylene	0.605	ug/L
Chrysene	1.79	ug/L
Fluoranthene	2.45	ug/L
Fluorene	28.4	ug/L
Indeno[1,2,3-c,d] pyrene	0.217J	ug/L
Naphthalene	1940	ug/L
Phenanthrene	40.3	ug/L
Pyrene	4.98	ug/L
Semivolatile Organic Fuels		
Diesel Range Organics	60.4	mg/L
Residual Range Organics	3.25	mg/L
Volatile Fuels		
Volatile GC/MS		
Gasoline Range Organics	16.8	mg/L
1,2,4-Trimethylbenzene	3570	ug/L
1,3,5-Trimethylbenzene	1160	ug/L
4-Isopropyltoluene	138	ug/L
Benzene	442	ug/L
Chloromethane	3.90J	ug/L
Ethylbenzene	60.3	ug/L
Isopropylbenzene (Cumene)	13.3	ug/L
Naphthalene	729	ug/L
n-Propylbenzene	27.2	ug/L
o-Xylene	1600	ug/L
P & M -Xylene	3920	ug/L
sec-Butylbenzene	31.4	ug/L
tert-Butylbenzene	22.9	ug/L
Toluene	327	ug/L
Xylenes (total)	5520	ug/L

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Results of 17863-G4

Client Sample ID: **17863-G4**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172455001
 Lab Project ID: 1172455

Collection Date: 05/17/17 13:25
 Received Date: 05/17/17 16:04
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	4.91	0.250	0.0750	ug/L	5		05/24/17 17:04
Acenaphthylene	0.125 U	0.250	0.0750	ug/L	5		05/24/17 17:04
Anthracene	1.39	0.250	0.0750	ug/L	5		05/24/17 17:04
Benzo(a)Anthracene	0.356	0.250	0.0750	ug/L	5		05/24/17 17:04
Benzo[a]pyrene	0.161	0.100	0.0310	ug/L	5		05/24/17 17:04
Benzo[b]Fluoranthene	0.270	0.250	0.0750	ug/L	5		05/24/17 17:04
Benzo[g,h,i]perylene	0.187 J	0.250	0.0750	ug/L	5		05/24/17 17:04
Benzo[k]fluoranthene	0.125 U	0.250	0.0750	ug/L	5		05/24/17 17:04
Chrysene	0.666	0.250	0.0750	ug/L	5		05/24/17 17:04
Dibenzo[a,h]anthracene	0.0500 U	0.100	0.0310	ug/L	5		05/24/17 17:04
Fluoranthene	1.11	0.250	0.0750	ug/L	5		05/24/17 17:04
Fluorene	6.44	0.250	0.0750	ug/L	5		05/24/17 17:04
Indeno[1,2,3-c,d] pyrene	0.125 U	0.250	0.0750	ug/L	5		05/24/17 17:04
Naphthalene	1600	40.0	12.4	ug/L	400		05/25/17 11:54
Phenanthrene	8.58	0.250	0.0750	ug/L	5		05/24/17 17:04
Pyrene	2.04	0.250	0.0750	ug/L	5		05/24/17 17:04
Surrogates							
2-Fluorobiphenyl (surr)	22.1	*	53-106	%	5		05/24/17 17:04
Terphenyl-d14 (surr)	11.5	*	58-132	%	5		05/24/17 17:04

Batch Information

Analytical Batch: XMS10049
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: ARS
 Analytical Date/Time: 05/25/17 11:54
 Container ID: 1172455001-I

Prep Batch: XXX37370
 Prep Method: SW3520C
 Prep Date/Time: 05/18/17 10:18
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Analytical Batch: XMS10047
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: S.G
 Analytical Date/Time: 05/24/17 17:04
 Container ID: 1172455001-I

Prep Batch: XXX37370
 Prep Method: SW3520C
 Prep Date/Time: 05/18/17 10:18
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL



Results of 17863-G4

Client Sample ID: 17863-G4
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172455001
Lab Project ID: 1172455

Collection Date: 05/17/17 13:25
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC13358
Analytical Method: AK102
Analyst: FDR
Analytical Date/Time: 05/23/17 15:41
Container ID: 1172455001-G
Prep Batch: XXX37388
Prep Method: SW3520C
Prep Date/Time: 05/22/17 09:30
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC13358
Analytical Method: AK103
Analyst: FDR
Analytical Date/Time: 05/23/17 15:41
Container ID: 1172455001-G
Prep Batch: XXX37388
Prep Method: SW3520C
Prep Date/Time: 05/22/17 09:30
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Results of 17863-G4

Client Sample ID: **17863-G4**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172455001
 Lab Project ID: 1172455

Collection Date: 05/17/17 13:25
 Received Date: 05/17/17 16:04
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	20.1	2.00	0.620	mg/L	20		05/20/17 04:10
Surrogates							
4-Bromofluorobenzene (surr)	105	50-150		%	20		05/20/17 04:10

Batch Information

Analytical Batch: VFC13640
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/20/17 04:10
 Container ID: 1172455001-B

Prep Batch: VXX30527
 Prep Method: SW5030B
 Prep Date/Time: 05/19/17 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 17863-G4

Client Sample ID: 17863-G4
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172455001
Lab Project ID: 1172455

Collection Date: 05/17/17 13:25
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

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J flagging is activated



Results of 17863-G4

Client Sample ID: **17863-G4**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172455001
 Lab Project ID: 1172455

Collection Date: 05/17/17 13:25
 Received Date: 05/17/17 16:04
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
Chloromethane	5.00 U	10.0	3.10	ug/L	10		05/22/17 19:56
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		05/20/17 14:06
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		05/20/17 14:06
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
Ethylbenzene	176	1.00	0.310	ug/L	1		05/20/17 14:06
Freon-113	5.00 U	10.0	3.10	ug/L	1		05/20/17 14:06
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
Isopropylbenzene (Cumene)	10.4	1.00	0.310	ug/L	1		05/20/17 14:06
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		05/20/17 14:06
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		05/20/17 14:06
Naphthalene	819	10.0	3.10	ug/L	10		05/22/17 19:56
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
n-Propylbenzene	8.52	1.00	0.310	ug/L	1		05/20/17 14:06
o-Xylene	2570	100	31.0	ug/L	100		05/24/17 00:48
P & M -Xylene	4250	200	62.0	ug/L	100		05/24/17 00:48
sec-Butylbenzene	9.31	1.00	0.310	ug/L	1		05/20/17 14:06
Styrene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
tert-Butylbenzene	10.0	1.00	0.310	ug/L	1		05/20/17 14:06
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
Toluene	280	10.0	3.10	ug/L	10		05/22/17 19:56
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:06
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		05/20/17 14:06
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		05/20/17 14:06
Xylenes (total)	6810	300	100	ug/L	100		05/24/17 00:48
Surrogates							
1,2-Dichloroethane-D4 (surr)	89.6		81-118	%	1		05/20/17 14:06
4-Bromofluorobenzene (surr)	84	*	85-114	%	1		05/20/17 14:06
Toluene-d8 (surr)	94.5		89-112	%	1		05/20/17 14:06

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J flagging is activated

Results of 17863-G4

Client Sample ID: **17863-G4**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172455001
Lab Project ID: 1172455

Collection Date: 05/17/17 13:25
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS16750
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/24/17 00:48
Container ID: 1172455001-D

Prep Batch: VXX30539
Prep Method: SW5030B
Prep Date/Time: 05/23/17 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS16745
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/20/17 14:06
Container ID: 1172455001-D

Prep Batch: VXX30530
Prep Method: SW5030B
Prep Date/Time: 05/20/17 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS16747
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/22/17 19:56
Container ID: 1172455001-D

Prep Batch: VXX30532
Prep Method: SW5030B
Prep Date/Time: 05/22/17 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 17863-G5

Client Sample ID: 17863-G5
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172455002
Lab Project ID: 1172455

Collection Date: 05/17/17 12:50
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS10049
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: ARS
Analytical Date/Time: 05/25/17 12:17
Container ID: 1172455002-I

Prep Batch: XXX37370
Prep Method: SW3520C
Prep Date/Time: 05/18/17 10:18
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS10047
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: S.G
Analytical Date/Time: 05/24/17 17:26
Container ID: 1172455002-I

Prep Batch: XXX37370
Prep Method: SW3520C
Prep Date/Time: 05/18/17 10:18
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL



Results of 17863-G5

Client Sample ID: 17863-G5
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172455002
Lab Project ID: 1172455

Collection Date: 05/17/17 12:50
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 53.3, 0.625, 0.188, mg/L, 1, 05/23/17 15:51

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 20.2, *, 50-150, %, 1, 05/23/17 15:51

Batch Information

Analytical Batch: XFC13358
Analytical Method: AK102
Analyst: FDR
Analytical Date/Time: 05/23/17 15:51
Container ID: 1172455002-G

Prep Batch: XXX37388
Prep Method: SW3520C
Prep Date/Time: 05/22/17 09:30
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 2.81, 0.521, 0.156, mg/L, 1, 05/23/17 15:51

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 19.9, *, 50-150, %, 1, 05/23/17 15:51

Batch Information

Analytical Batch: XFC13358
Analytical Method: AK103
Analyst: FDR
Analytical Date/Time: 05/23/17 15:51
Container ID: 1172455002-G

Prep Batch: XXX37388
Prep Method: SW3520C
Prep Date/Time: 05/22/17 09:30
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Results of 17863-G5

Client Sample ID: **17863-G5**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172455002
 Lab Project ID: 1172455

Collection Date: 05/17/17 12:50
 Received Date: 05/17/17 16:04
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	17.1	2.00	0.620	mg/L	20		05/20/17 04:29
Surrogates							
4-Bromofluorobenzene (surr)	105	50-150		%	20		05/20/17 04:29

Batch Information

Analytical Batch: VFC13640
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/20/17 04:29
 Container ID: 1172455002-B

Prep Batch: VXX30527
 Prep Method: SW5030B
 Prep Date/Time: 05/19/17 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 17863-G5

Client Sample ID: 17863-G5
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172455002
Lab Project ID: 1172455

Collection Date: 05/17/17 12:50
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 05/25/2017 6:46:07PM

J flagging is activated



Results of 17863-G5

Client Sample ID: **17863-G5**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172455002
 Lab Project ID: 1172455

Collection Date: 05/17/17 12:50
 Received Date: 05/17/17 16:04
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
Chloromethane	5.00 U	10.0	3.10	ug/L	10		05/22/17 20:14
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		05/20/17 14:24
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		05/20/17 14:24
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
Ethylbenzene	76.0	1.00	0.310	ug/L	1		05/20/17 14:24
Freon-113	5.00 U	10.0	3.10	ug/L	1		05/20/17 14:24
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
Isopropylbenzene (Cumene)	9.69	1.00	0.310	ug/L	1		05/20/17 14:24
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		05/20/17 14:24
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		05/20/17 14:24
Naphthalene	654	10.0	3.10	ug/L	10		05/22/17 20:14
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
n-Propylbenzene	16.0	1.00	0.310	ug/L	1		05/20/17 14:24
o-Xylene	1630	10.0	3.10	ug/L	10		05/22/17 20:14
P & M -Xylene	3880	20.0	6.20	ug/L	10		05/22/17 20:14
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
Styrene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
tert-Butylbenzene	13.2	1.00	0.310	ug/L	1		05/20/17 14:24
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
Toluene	318	10.0	3.10	ug/L	10		05/22/17 20:14
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		05/20/17 14:24
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		05/20/17 14:24
Vinyl chloride	0.750 U	1.50	0.500	ug/L	10		05/22/17 20:14
Xylenes (total)	5510	30.0	10.0	ug/L	10		05/22/17 20:14
Surrogates							
1,2-Dichloroethane-D4 (surr)	87.8		81-118	%	1		05/20/17 14:24
4-Bromofluorobenzene (surr)	121	*	85-114	%	1		05/20/17 14:24
Toluene-d8 (surr)	99		89-112	%	1		05/20/17 14:24

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Results of 17863-G5

Client Sample ID: **17863-G5**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172455002
Lab Project ID: 1172455

Collection Date: 05/17/17 12:50
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS16750
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/24/17 01:05
Container ID: 1172455002-D

Prep Batch: VXX30539
Prep Method: SW5030B
Prep Date/Time: 05/23/17 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS16745
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/20/17 14:24
Container ID: 1172455002-D

Prep Batch: VXX30530
Prep Method: SW5030B
Prep Date/Time: 05/20/17 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS16747
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/22/17 20:14
Container ID: 1172455002-D

Prep Batch: VXX30532
Prep Method: SW5030B
Prep Date/Time: 05/22/17 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 17863-G15

Client Sample ID: **17863-G15**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172455003
 Lab Project ID: 1172455

Collection Date: 05/17/17 13:00
 Received Date: 05/17/17 16:04
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	13.3	0.256	0.0768	ug/L	5		05/24/17 17:49
Acenaphthylene	0.128 U	0.256	0.0768	ug/L	5		05/24/17 17:49
Anthracene	7.17	0.256	0.0768	ug/L	5		05/24/17 17:49
Benzo(a)Anthracene	1.15	0.256	0.0768	ug/L	5		05/24/17 17:49
Benzo[a]pyrene	0.576	0.102	0.0318	ug/L	5		05/24/17 17:49
Benzo[b]Fluoranthene	0.749	0.256	0.0768	ug/L	5		05/24/17 17:49
Benzo[g,h,i]perylene	0.605	0.256	0.0768	ug/L	5		05/24/17 17:49
Benzo[k]fluoranthene	0.128 U	0.256	0.0768	ug/L	5		05/24/17 17:49
Chrysene	1.79	0.256	0.0768	ug/L	5		05/24/17 17:49
Dibenzo[a,h]anthracene	0.0510 U	0.102	0.0318	ug/L	5		05/24/17 17:49
Fluoranthene	2.45	0.256	0.0768	ug/L	5		05/24/17 17:49
Fluorene	28.4	0.256	0.0768	ug/L	5		05/24/17 17:49
Indeno[1,2,3-c,d] pyrene	0.217 J	0.256	0.0768	ug/L	5		05/24/17 17:49
Naphthalene	1940	41.0	12.7	ug/L	400		05/25/17 13:27
Phenanthrene	40.3	0.256	0.0768	ug/L	5		05/24/17 17:49
Pyrene	4.98	0.256	0.0768	ug/L	5		05/24/17 17:49
Surrogates							
2-Fluorobiphenyl (surr)	27	*	53-106	%	5		05/24/17 17:49
Terphenyl-d14 (surr)	16.7	*	58-132	%	5		05/24/17 17:49

Batch Information

Analytical Batch: XMS10049
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: ARS
 Analytical Date/Time: 05/25/17 13:27
 Container ID: 1172455003-I

Prep Batch: XXX37370
 Prep Method: SW3520C
 Prep Date/Time: 05/18/17 10:18
 Prep Initial Wt./Vol.: 244 mL
 Prep Extract Vol: 1 mL

Analytical Batch: XMS10047
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: S.G
 Analytical Date/Time: 05/24/17 17:49
 Container ID: 1172455003-I

Prep Batch: XXX37370
 Prep Method: SW3520C
 Prep Date/Time: 05/18/17 10:18
 Prep Initial Wt./Vol.: 244 mL
 Prep Extract Vol: 1 mL

Results of 17863-G15

Client Sample ID: **17863-G15**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172455003
 Lab Project ID: 1172455

Collection Date: 05/17/17 13:00
 Received Date: 05/17/17 16:04
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	60.4	0.588	0.176	mg/L	1		05/23/17 16:00

Surrogates

5a Androstane (surr)	18.7 *	50-150		%	1		05/23/17 16:00
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Batch Information

Analytical Batch: XFC13358
 Analytical Method: AK102
 Analyst: FDR
 Analytical Date/Time: 05/23/17 16:00
 Container ID: 1172455003-G

Prep Batch: XXX37388
 Prep Method: SW3520C
 Prep Date/Time: 05/22/17 09:30
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	3.25	0.490	0.147	mg/L	1		05/23/17 16:00

Surrogates

n-Triacontane-d62 (surr)	17.7 *	50-150		%	1		05/23/17 16:00
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Batch Information

Analytical Batch: XFC13358
 Analytical Method: AK103
 Analyst: FDR
 Analytical Date/Time: 05/23/17 16:00
 Container ID: 1172455003-G

Prep Batch: XXX37388
 Prep Method: SW3520C
 Prep Date/Time: 05/22/17 09:30
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 1 mL

Results of 17863-G15

Client Sample ID: **17863-G15**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172455003
 Lab Project ID: 1172455

Collection Date: 05/17/17 13:00
 Received Date: 05/17/17 16:04
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	16.8	2.00	0.620	mg/L	20		05/20/17 04:48
Surrogates							
4-Bromofluorobenzene (surr)	103	50-150		%	20		05/20/17 04:48

Batch Information

Analytical Batch: VFC13640
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/20/17 04:48
 Container ID: 1172455003-B

Prep Batch: VXX30527
 Prep Method: SW5030B
 Prep Date/Time: 05/19/17 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 17863-G15

Client Sample ID: 17863-G15
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172455003
Lab Project ID: 1172455

Collection Date: 05/17/17 13:00
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

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Results of 17863-G15

Client Sample ID: 17863-G15
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172455003
Lab Project ID: 1172455

Collection Date: 05/17/17 13:00
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 17863-G15

Client Sample ID: **17863-G15**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172455003
Lab Project ID: 1172455

Collection Date: 05/17/17 13:00
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS16750
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/24/17 01:22
Container ID: 1172455003-D

Prep Batch: VXX30539
Prep Method: SW5030B
Prep Date/Time: 05/23/17 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS16745
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/20/17 14:41
Container ID: 1172455003-D

Prep Batch: VXX30530
Prep Method: SW5030B
Prep Date/Time: 05/20/17 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS16747
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/22/17 20:31
Container ID: 1172455003-D

Prep Batch: VXX30532
Prep Method: SW5030B
Prep Date/Time: 05/22/17 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of 17863-WTB

Client Sample ID: **17863-WTB**
 Client Project ID: **32-1-17863 459 Bluff Road**
 Lab Sample ID: 1172455004
 Lab Project ID: 1172455

Collection Date: 05/17/17 14:00
 Received Date: 05/17/17 16:04
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		05/18/17 15:28
Surrogates							
4-Bromofluorobenzene (surr)	101	50-150		%	1		05/18/17 15:28

Batch Information

Analytical Batch: VFC13639
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 05/18/17 15:28
 Container ID: 1172455004-A

Prep Batch: VXX30517
 Prep Method: SW5030B
 Prep Date/Time: 05/18/17 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 17863-WTB

Client Sample ID: 17863-WTB
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172455004
Lab Project ID: 1172455

Collection Date: 05/17/17 14:00
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

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Results of 17863-WTB

Client Sample ID: 17863-WTB
Client Project ID: 32-1-17863 459 Bluff Road
Lab Sample ID: 1172455004
Lab Project ID: 1172455

Collection Date: 05/17/17 14:00
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds like Chloroform, Benzene, and Toluene with their respective test results and detection limits.

Results of 17863-WTB

Client Sample ID: **17863-WTB**
Client Project ID: **32-1-17863 459 Bluff Road**
Lab Sample ID: 1172455004
Lab Project ID: 1172455

Collection Date: 05/17/17 14:00
Received Date: 05/17/17 16:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS16745
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 05/20/17 12:57
Container ID: 1172455004-D

Prep Batch: VXX30530
Prep Method: SW5030B
Prep Date/Time: 05/20/17 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS16750
Analytical Method: SW8260C
Analyst: TJT
Analytical Date/Time: 05/23/17 21:38
Container ID: 1172455004-D

Prep Batch: VXX30539
Prep Method: SW5030B
Prep Date/Time: 05/23/17 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1759319 [VXX/30517]
 Blank Lab ID: 1385531

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1172455004

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	101	50-150		%

Batch Information

Analytical Batch: VFC13639
 Analytical Method: AK101
 Instrument: Agilent 7890A PID/FID
 Analyst: ST
 Analytical Date/Time: 5/18/2017 1:34:00PM

Prep Batch: VXX30517
 Prep Method: SW5030B
 Prep Date/Time: 5/18/2017 8:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 05/25/2017 6:46:11PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172455 [VXX30517]
 Blank Spike Lab ID: 1385534
 Date Analyzed: 05/18/2017 14:31

Spike Duplicate ID: LCSD for HBN 1172455 [VXX30517]
 Spike Duplicate Lab ID: 1385535
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455004

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.929	93	1.00	0.940	94	(60-120)	1.10	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	105	105	0.0500	108	108	(50-150)	2.80	
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Batch Information

Analytical Batch: VFC13639
 Analytical Method: AK101
 Instrument: Agilent 7890A PID/FID
 Analyst: ST

Prep Batch: VXX30517
 Prep Method: SW5030B
 Prep Date/Time: 05/18/2017 08:00
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1759356 [VXX/30527]

Blank Lab ID: 1385696

QC for Samples:

1172455001, 1172455002, 1172455003

Matrix: Water (Surface, Eff., Ground)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	99.7	50-150		%

Batch Information

Analytical Batch: VFC13640

Analytical Method: AK101

Instrument: Agilent 7890A PID/FID

Analyst: ST

Analytical Date/Time: 5/19/2017 1:04:00PM

Prep Batch: VXX30527

Prep Method: SW5030B

Prep Date/Time: 5/19/2017 8:00:00AM

Prep Initial Wt./Vol.: 5 mL

Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172455 [VXX30527]
 Blank Spike Lab ID: 1385699
 Date Analyzed: 05/20/2017 03:13

Spike Duplicate ID: LCSD for HBN 1172455 [VXX30527]
 Spike Duplicate Lab ID: 1385700
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.983	98	1.00	0.945	95	(60-120)	4.00	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	107	107	0.0500	103	103	(50-150)	3.70	
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Batch Information

Analytical Batch: **VFC13640**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX30527**
 Prep Method: **SW5030B**
 Prep Date/Time: **05/19/2017 08:00**
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 05/25/2017 6:46:18PM



Method Blank

Blank ID: MB for HBN 1759388 [VXX/30530]

Blank Lab ID: 1385817

QC for Samples:

1172455001, 1172455002, 1172455003, 1172455004

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 05/25/2017 6:46:20PM

Method Blank

Blank ID: MB for HBN 1759388 [VXX/30530]
 Blank Lab ID: 1385817

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1172455001, 1172455002, 1172455003, 1172455004

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	95.7	81-118		%
4-Bromofluorobenzene (surr)	100	85-114		%
Toluene-d8 (surr)	101	89-112		%

Method Blank

Blank ID: MB for HBN 1759388 [VXX/30530]

Blank Lab ID: 1385817

QC for Samples:

1172455001, 1172455002, 1172455003, 1172455004

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

Parameter

Results

LOQ/CL

DL

Units

Batch Information

Analytical Batch: VMS16745

Analytical Method: SW8260C

Instrument: VPA 780/5975 GC/MS

Analyst: NRB

Analytical Date/Time: 5/20/2017 10:46:00AM

Prep Batch: VXX30530

Prep Method: SW5030B

Prep Date/Time: 5/20/2017 6:00:00AM

Prep Initial Wt./Vol.: 5 mL

Prep Extract Vol: 5 mL

Print Date: 05/25/2017 6:46:20PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172455 [VXX30530]
 Blank Spike Lab ID: 1385818
 Date Analyzed: 05/20/2017 11:03

Spike Duplicate ID: LCSD for HBN 1172455
 [VXX30530]
 Spike Duplicate Lab ID: 1385819
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003, 1172455004

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	29.5	98	30	29.0	97	(78-124)	1.80	(< 20)
1,1,1-Trichloroethane	30	29.5	98	30	30.0	100	(74-131)	1.80	(< 20)
1,1,2,2-Tetrachloroethane	30	29.8	99	30	29.0	97	(71-121)	2.90	(< 20)
1,1,2-Trichloroethane	30	30.5	102	30	30.6	102	(80-119)	0.46	(< 20)
1,1-Dichloroethane	30	27.4	91	30	27.8	93	(77-125)	1.60	(< 20)
1,1-Dichloroethene	30	31.3	104	30	30.2	101	(71-131)	3.60	(< 20)
1,1-Dichloropropene	30	31.0	103	30	31.7	106	(79-125)	2.30	(< 20)
1,2,3-Trichlorobenzene	30	31.9	106	30	32.2	107	(69-129)	0.87	(< 20)
1,2,3-Trichloropropane	30	29.2	97	30	28.4	95	(73-122)	2.70	(< 20)
1,2,4-Trichlorobenzene	30	32.0	107	30	31.7	106	(69-130)	0.69	(< 20)
1,2,4-Trimethylbenzene	30	31.0	103	30	31.1	104	(79-124)	0.42	(< 20)
1,2-Dibromo-3-chloropropane	30	28.8	96	30	28.7	96	(62-128)	0.52	(< 20)
1,2-Dibromoethane	30	31.1	104	30	31.4	105	(77-121)	0.99	(< 20)
1,2-Dichlorobenzene	30	30.0	100	30	29.6	99	(80-119)	1.40	(< 20)
1,2-Dichloroethane	30	27.1	90	30	27.4	91	(73-128)	1.10	(< 20)
1,2-Dichloropropane	30	30.5	102	30	30.9	103	(78-122)	1.20	(< 20)
1,3,5-Trimethylbenzene	30	31.6	105	30	31.5	105	(75-124)	0.25	(< 20)
1,3-Dichlorobenzene	30	30.2	101	30	30.2	101	(80-119)	0.17	(< 20)
1,3-Dichloropropane	30	31.0	103	30	31.1	104	(80-119)	0.42	(< 20)
1,4-Dichlorobenzene	30	30.5	102	30	30.3	101	(79-118)	0.66	(< 20)
2,2-Dichloropropane	30	31.1	104	30	31.7	106	(60-139)	2.00	(< 20)
2-Butanone (MEK)	90	73.3	82	90	73.2	81	(56-143)	0.12	(< 20)
2-Chlorotoluene	30	31.0	103	30	31.1	104	(79-122)	0.29	(< 20)
2-Hexanone	90	84.8	94	90	84.3	94	(57-139)	0.67	(< 20)
4-Chlorotoluene	30	30.8	103	30	30.6	102	(78-122)	0.68	(< 20)
4-Isopropyltoluene	30	33.1	110	30	32.8	109	(77-127)	0.82	(< 20)
4-Methyl-2-pentanone (MIBK)	90	88.1	98	90	86.7	96	(67-130)	1.70	(< 20)
Benzene	30	29.4	98	30	30.1	100	(79-120)	2.10	(< 20)
Bromobenzene	30	30.6	102	30	30.5	102	(80-120)	0.46	(< 20)
Bromochloromethane	30	29.4	98	30	29.9	100	(78-123)	1.60	(< 20)
Bromodichloromethane	30	29.6	99	30	30.1	100	(79-125)	1.50	(< 20)
Bromoform	30	29.0	97	30	28.7	96	(66-130)	0.94	(< 20)
Bromomethane	30	25.4	85	30	29.1	97	(53-141)	13.50	(< 20)
Carbon disulfide	45	46.2	103	45	43.6	97	(64-133)	5.70	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1172455 [VXX30530]
 Blank Spike Lab ID: 1385818
 Date Analyzed: 05/20/2017 11:03

Spike Duplicate ID: LCSD for HBN 1172455
 [VXX30530]
 Spike Duplicate Lab ID: 1385819
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003, 1172455004

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	29.9	100	30	31.0	103	(72-136)	3.70	(< 20)
Chlorobenzene	30	29.1	97	30	29.3	98	(82-118)	0.69	(< 20)
Chloroethane	30	28.5	95	30	29.9	100	(60-138)	4.70	(< 20)
Chloroform	30	28.1	94	30	28.5	95	(79-124)	1.50	(< 20)
cis-1,2-Dichloroethene	30	29.5	98	30	29.6	99	(78-123)	0.64	(< 20)
cis-1,3-Dichloropropene	30	29.3	98	30	29.8	99	(75-124)	1.70	(< 20)
Dibromochloromethane	30	30.1	100	30	30.4	101	(74-126)	0.89	(< 20)
Dibromomethane	30	29.1	97	30	29.4	98	(79-123)	1.10	(< 20)
Dichlorodifluoromethane	30	30.5	102	30	33.5	112	(32-152)	9.20	(< 20)
Ethylbenzene	30	29.6	99	30	30.5	102	(79-121)	3.10	(< 20)
Freon-113	45	48.9	109	45	46.8	104	(70-136)	4.30	(< 20)
Hexachlorobutadiene	30	30.4	101	30	29.9	100	(66-134)	1.60	(< 20)
Isopropylbenzene (Cumene)	30	31.0	103	30	31.9	106	(72-131)	2.80	(< 20)
Methylene chloride	30	29.6	99	30	30.3	101	(74-124)	2.30	(< 20)
Methyl-t-butyl ether	45	50.9	113	45	51.6	115	(71-124)	1.40	(< 20)
Naphthalene	30	29.4	98	30	29.6	99	(61-128)	0.95	(< 20)
n-Butylbenzene	30	30.1	100	30	29.9	100	(75-128)	0.73	(< 20)
n-Propylbenzene	30	31.6	105	30	31.9	106	(76-126)	0.85	(< 20)
o-Xylene	30	29.1	97	30	29.8	99	(78-122)	2.40	(< 20)
P & M -Xylene	60	58.7	98	60	59.6	99	(80-121)	1.50	(< 20)
sec-Butylbenzene	30	32.5	108	30	32.6	109	(77-126)	0.18	(< 20)
Styrene	30	31.3	104	30	31.8	106	(78-123)	1.70	(< 20)
tert-Butylbenzene	30	32.5	108	30	32.7	109	(78-124)	0.58	(< 20)
Tetrachloroethene	30	31.5	105	30	31.2	104	(74-129)	0.80	(< 20)
Toluene	30	30.0	100	30	30.1	100	(80-121)	0.13	(< 20)
trans-1,2-Dichloroethene	30	33.6	112	30	34.2	114	(75-124)	1.60	(< 20)
trans-1,3-Dichloropropene	30	31.7	106	30	32.2	107	(73-127)	1.60	(< 20)
Trichloroethene	30	30.2	101	30	30.8	103	(79-123)	2.10	(< 20)
Trichlorofluoromethane	30	28.1	94	30	28.4	95	(65-141)	0.78	(< 20)
Vinyl acetate	30	25.6	85	30	25.6	85	(54-146)	0.00	(< 20)
Vinyl chloride	30	45.5	152	* 30	45.9	153	* (58-137)	0.79	(< 20)
Xylenes (total)	90	87.8	98	90	89.4	99	(79-121)	1.80	(< 20)

Surrogates

Print Date: 05/25/2017 6:46:21PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172455 [VXX30530]
 Blank Spike Lab ID: 1385818
 Date Analyzed: 05/20/2017 11:03

Spike Duplicate ID: LCSD for HBN 1172455 [VXX30530]
 Spike Duplicate Lab ID: 1385819
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003, 1172455004

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichloroethane-D4 (surr)	30	90.8	91	30	90.6	91	(81-118)	0.26	
4-Bromofluorobenzene (surr)	30	103	103	30	102	102	(85-114)	0.71	
Toluene-d8 (surr)	30	102	102	30	100	100	(89-112)	1.40	

Batch Information

Analytical Batch: **VMS16745**
 Analytical Method: **SW8260C**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **NRB**

Prep Batch: **VXX30530**
 Prep Method: **SW5030B**
 Prep Date/Time: **05/20/2017 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1759473 [VXX/30532]
 Blank Lab ID: 1385925

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1172455001, 1172455002, 1172455003

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Chloromethane	0.500U	1.00	0.310	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	101	81-118		%
4-Bromofluorobenzene (surr)	100	85-114		%
Toluene-d8 (surr)	98.4	89-112		%

Batch Information

Analytical Batch: VMS16747
 Analytical Method: SW8260C
 Instrument: VSA Agilent GC/MS 7890B/5977A
 Analyst: TJT
 Analytical Date/Time: 5/22/2017 10:02:00AM

Prep Batch: VXX30532
 Prep Method: SW5030B
 Prep Date/Time: 5/22/2017 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172455 [VXX30532]
 Blank Spike Lab ID: 1385926
 Date Analyzed: 05/22/2017 10:19

Spike Duplicate ID: LCSD for HBN 1172455 [VXX30532]
 Spike Duplicate Lab ID: 1385927
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,3,5-Trimethylbenzene	30	28.6	95	30	27.4	91	(75-124)	4.40	(< 20)
Benzene	30	28.0	93	30	27.7	92	(79-120)	0.97	(< 20)
Chloromethane	30	23.7	79	30	27.2	91	(50-139)	13.70	(< 20)
Naphthalene	30	29.7	99	30	29.5	98	(61-128)	0.51	(< 20)
o-Xylene	30	27.1	90	30	26.6	89	(78-122)	1.90	(< 20)
P & M -Xylene	60	53.8	90	60	52.5	88	(80-121)	2.40	(< 20)
Toluene	30	26.8	89	30	26.6	89	(80-121)	0.45	(< 20)
Vinyl chloride	30	24.6	82	30	25.8	86	(58-137)	4.80	(< 20)
Xylenes (total)	90	80.9	90	90	79.1	88	(79-121)	2.30	(< 20)

Surrogates

1,2-Dichloroethane-D4 (surr)	30	99.8	100	30	101	101	(81-118)	1.60
4-Bromofluorobenzene (surr)	30	99.9	100	30	99.5	100	(85-114)	0.43
Toluene-d8 (surr)	30	98.4	98	30	99.6	100	(89-112)	1.20

Batch Information

Analytical Batch: **VMS16747**
 Analytical Method: **SW8260C**
 Instrument: **VSA Agilent GC/MS 7890B/5977A**
 Analyst: **TJT**

Prep Batch: **VXX30532**
 Prep Method: **SW5030B**
 Prep Date/Time: **05/22/2017 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



Matrix Spike Summary

Original Sample ID: 1385928
MS Sample ID: 1385929 MS
MSD Sample ID: 1385930 MSD

Analysis Date: 05/22/2017 21:06
Analysis Date: 05/22/2017 21:23
Analysis Date: 05/22/2017 21:41
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,3,5-Trimethylbenzene	44.0J	3000	2730	90	3000	2790	91	75-124	2.10	(< 20)
Benzene	6060	3000	8490	81	3000	8640	86	79-120	1.80	(< 20)
Chloromethane	50.0U	3000	2440	81	3000	2820	94	50-139	14.40	(< 20)
Naphthalene	50.0U	3000	2870	96	3000	2880	96	61-128	0.35	(< 20)
o-Xylene	557	3000	3060	83	3000	3130	86	78-122	2.50	(< 20)
P & M -Xylene	1170	6000	6090	82	6000	6360	87	80-121	4.40	(< 20)
Toluene	2850	3000	5280	81	3000	5480	88	80-121	3.80	(< 20)
Vinyl chloride	7.50U	3000	2480	83	3000	2560	85	58-137	3.30	(< 20)
Xylenes (total)	1730	9000	9150	83	9000	9500	86	79-121	3.70	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		3000	2980	99	3000	2960	99	81-118	0.44	
4-Bromofluorobenzene (surr)		3000	2980	99	3000	3010	100	85-114	0.93	
Toluene-d8 (surr)		3000	2910	97	3000	2950	98	89-112	1.40	

Batch Information

Analytical Batch: VMS16747
Analytical Method: SW8260C
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: TJT
Analytical Date/Time: 5/22/2017 9:23:00PM

Prep Batch: VXX30532
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 5/22/2017 6:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 05/25/2017 6:46:30PM

Method Blank

Blank ID: MB for HBN 1759623 [VXX/30539]
 Blank Lab ID: 1386397

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1172455001, 1172455002, 1172455003, 1172455004

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
Chloromethane	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	101	81-118		%
4-Bromofluorobenzene (surr)	101	85-114		%
Toluene-d8 (surr)	99.3	89-112		%

Batch Information

Analytical Batch: VMS16750
 Analytical Method: SW8260C
 Instrument: VSA Agilent GC/MS 7890B/5977A
 Analyst: TJJ
 Analytical Date/Time: 5/23/2017 4:14:00PM

Prep Batch: VXX30539
 Prep Method: SW5030B
 Prep Date/Time: 5/23/2017 12:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172455 [VXX30539]
 Blank Spike Lab ID: 1386398
 Date Analyzed: 05/23/2017 16:31

Spike Duplicate ID: LCSD for HBN 1172455
 [VXX30539]
 Spike Duplicate Lab ID: 1386399
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003, 1172455004

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2,4-Trimethylbenzene	30	28.4	95	30	29.1	97	(79-124)	2.30	(< 20)
Chloromethane	30	28.2	94	30	32.7	109	(50-139)	14.70	(< 20)
o-Xylene	30	27.7	93	30	28.8	96	(78-122)	3.70	(< 20)
P & M -Xylene	60	55.1	92	60	57.7	96	(80-121)	4.50	(< 20)
Xylenes (total)	90	82.9	92	90	86.5	96	(79-121)	4.30	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	99.6	100	30	99.3	99	(81-118)	0.30	
4-Bromofluorobenzene (surr)	30	97.2	97	30	100	100	(85-114)	3.00	
Toluene-d8 (surr)	30	98.7	99	30	99.5	100	(89-112)	0.77	

Batch Information

Analytical Batch: VMS16750
 Analytical Method: SW8260C
 Instrument: VSA Agilent GC/MS 7890B/5977A
 Analyst: TJT

Prep Batch: VXX30539
 Prep Method: SW5030B
 Prep Date/Time: 05/23/2017 00:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



Matrix Spike Summary

Original Sample ID: 1386465
MS Sample ID: 1386455 MS
MSD Sample ID: 1386456 MSD

Analysis Date: 05/24/2017 1:40
Analysis Date: 05/23/2017 19:02
Analysis Date: 05/23/2017 19:19
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003, 1172455004

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2,4-Trimethylbenzene	75.0J	3000	2920	95	3000	2990	97	79-124	2.30	(< 20)
Chloromethane	50.0U	3000	3450	115	3000	3310	110	50-139	4.30	(< 20)
o-Xylene	44.0J	3000	2940	96	3000	2970	97	78-122	0.95	(< 20)
P & M -Xylene	109J	6000	5920	97	6000	5910	97	80-121	0.12	(< 20)
Xylenes (total)	153J	9000	8850	97	9000	8870	97	79-121	0.24	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		3000	3020	101	3000	3020	101	81-118	0.07	
4-Bromofluorobenzene (surr)		3000	3000	100	3000	2960	99	85-114	1.20	
Toluene-d8 (surr)		3000	3010	100	3000	3020	101	89-112	0.23	

Batch Information

Analytical Batch: VMS16750
Analytical Method: SW8260C
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: TJT
Analytical Date/Time: 5/23/2017 7:02:00PM

Prep Batch: VXX30539
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 5/23/2017 12:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 05/25/2017 6:46:34PM



Matrix Spike Summary

Original Sample ID: 1386467
MS Sample ID: 1386459 MS
MSD Sample ID: 1386460 MSD

Analysis Date: 05/23/2017 21:55
Analysis Date: 05/23/2017 20:12
Analysis Date: 05/23/2017 20:29
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003, 1172455004

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2,4-Trimethylbenzene	1.91	30.0	31.4	98	30.0	31.0	97	79-124	1.30	(< 20)
Chloromethane	0.310J	30.0	31.1	103	30.0	28.8	95	50-139	7.40	(< 20)
o-Xylene	0.500U	30.0	29	97	30.0	28.7	96	78-122	1.10	(< 20)
P & M -Xylene	1.00U	60.0	57.8	96	60.0	57.8	96	80-121	0.04	(< 20)
Xylenes (total)	1.50U	90.0	86.8	97	90.0	86.5	96	79-121	0.38	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		30.0	30	100	30.0	29.7	99	81-118	1.30	
4-Bromofluorobenzene (surr)		30.0	29.7	99	30.0	30.1	100	85-114	1.50	
Toluene-d8 (surr)		30.0	29.7	99	30.0	29.9	100	89-112	0.60	

Batch Information

Analytical Batch: VMS16750
Analytical Method: SW8260C
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: TJT
Analytical Date/Time: 5/23/2017 8:12:00PM

Prep Batch: VXX30539
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 5/23/2017 12:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 05/25/2017 6:46:34PM



Method Blank

Blank ID: MB for HBN 1759097 [XXX/37370]
Blank Lab ID: 1385231

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1172455001, 1172455002, 1172455003

Results by EPA 625M SIM (PAH) LV

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Fluorobiphenyl (surr)	91.1	53-106		%
Terphenyl-d14 (surr)	89.6	58-132		%

Batch Information

Analytical Batch: XMS10047
Analytical Method: EPA 625M SIM (PAH) LV
Instrument: Agilent GC 7890B/5977A SWA
Analyst: S.G
Analytical Date/Time: 5/24/2017 3:57:00PM

Prep Batch: XXX37370
Prep Method: SW3520C
Prep Date/Time: 5/18/2017 10:18:37AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172455 [XXX37370]
 Blank Spike Lab ID: 1385232
 Date Analyzed: 05/24/2017 16:19

Spike Duplicate ID: LCSD for HBN 1172455
 [XXX37370]
 Spike Duplicate Lab ID: 1385233
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003

Results by EPA 625M SIM (PAH) LV

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	2	1.79	89	2	1.73	86	(48-114)	3.50	(< 20)
Acenaphthylene	2	1.55	77	2	1.47	74	(35-121)	5.10	(< 20)
Anthracene	2	1.66	83	2	1.55	77	(53-119)	7.30	(< 20)
Benzo(a)Anthracene	2	1.62	81	2	1.43	72	(59-120)	12.30	(< 20)
Benzo[a]pyrene	2	1.58	79	2	1.41	71	(53-120)	11.30	(< 20)
Benzo[b]Fluoranthene	2	1.64	82	2	1.45	73	(53-126)	12.30	(< 20)
Benzo[g,h,i]perylene	2	1.60	80	2	1.42	71	(44-128)	12.10	(< 20)
Benzo[k]fluoranthene	2	1.64	82	2	1.47	74	(54-125)	10.70	(< 20)
Chrysene	2	1.70	85	2	1.52	76	(57-120)	11.30	(< 20)
Dibenzo[a,h]anthracene	2	1.58	79	2	1.39	70	(44-131)	12.80	(< 20)
Fluoranthene	2	1.56	78	2	1.38	69	(58-120)	12.50	(< 20)
Fluorene	2	1.60	80	2	1.51	75	(50-118)	6.00	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.60	80	2	1.43	71	(48-130)	11.40	(< 20)
Naphthalene	2	1.54	77	2	1.48	74	(43-114)	4.00	(< 20)
Phenanthrene	2	1.60	80	2	1.50	75	(53-115)	6.10	(< 20)
Pyrene	2	1.65	82	2	1.47	73	(53-121)	11.70	(< 20)
Surrogates									
2-Fluorobiphenyl (surr)	2	84	84	2	79.7	80	(53-106)	5.20	
Terphenyl-d14 (surr)	2	83.8	84	2	77.7	78	(58-132)	7.60	

Batch Information

Analytical Batch: XMS10047
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: S.G

Prep Batch: XXX37370
 Prep Method: SW3520C
 Prep Date/Time: 05/18/2017 10:18
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL



Method Blank

Blank ID: MB for HBN 1759369 [XXX/37388]

Blank Lab ID: 1385745

QC for Samples:

1172455001, 1172455002, 1172455003

Matrix: Water (Surface, Eff., Ground)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.186J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	73.7	60-120		%

Batch Information

Analytical Batch: XFC13353

Analytical Method: AK102

Instrument: Agilent 7890B R

Analyst: FDR

Analytical Date/Time: 5/22/2017 5:24:00PM

Prep Batch: XXX37388

Prep Method: SW3520C

Prep Date/Time: 5/22/2017 9:30:15AM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Print Date: 05/25/2017 6:46:38PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172455 [XXX37388]
 Blank Spike Lab ID: 1385746
 Date Analyzed: 05/22/2017 17:34

Spike Duplicate ID: LCSD for HBN 1172455
 [XXX37388]
 Spike Duplicate Lab ID: 1385747
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	18.4	92	20	18.6	93	(75-125)	0.87	(< 20)

Surrogates

5a Androstane (surr)	0.4	85.9	86	0.4	87.4	87	(60-120)	1.80	
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Batch Information

Analytical Batch: **XFC13353**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **FDR**

Prep Batch: **XXX37388**
 Prep Method: **SW3520C**
 Prep Date/Time: **05/22/2017 09:30**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL



Method Blank

Blank ID: MB for HBN 1759369 [XXX/37388]

Blank Lab ID: 1385745

QC for Samples:

1172455001, 1172455002, 1172455003

Matrix: Water (Surface, Eff., Ground)

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	78.5	60-120		%

Batch Information

Analytical Batch: XFC13353

Analytical Method: AK103

Instrument: Agilent 7890B R

Analyst: FDR

Analytical Date/Time: 5/22/2017 5:24:00PM

Prep Batch: XXX37388

Prep Method: SW3520C

Prep Date/Time: 5/22/2017 9:30:15AM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Print Date: 05/25/2017 6:46:41PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1172455 [XXX37388]
 Blank Spike Lab ID: 1385746
 Date Analyzed: 05/22/2017 17:34

Spike Duplicate ID: LCSD for HBN 1172455
 [XXX37388]
 Spike Duplicate Lab ID: 1385747
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1172455001, 1172455002, 1172455003

Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	19.8	99	20	20.0	100	(60-120)	0.93	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	105	105	0.4	103	103	(60-120)	1.80	

Batch Information

Analytical Batch: **XFC13353**
 Analytical Method: **AK103**
 Instrument: **Agilent 7890B R**
 Analyst: **FDR**

Prep Batch: **XXX37388**
 Prep Method: **SW3520C**
 Prep Date/Time: **05/22/2017 09:30**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

1172455



SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Laboratory SGS Page 1 of 1
Attn: TORI

400 N. 34th Street, Suite 100 Seattle, WA 98103 (206) 632-8020
2043 Westport Center Drive St. Louis, MO 63146-3564 (314) 699-9660
2705 Saint Andrews Loop, Suite A Pasco, WA 99301-3378 (509) 946-6309

Analysis Parameters/Sample Container Description
(include preservative if used)

2355 Hill Road Fairbanks, AK 99709 (907) 479-0600
3990 Collins Way, Suite 100 Lake Oswego, OR 97035 (503) 223-6147
5430 Fairbanks Street, Suite 3 Anchorage, AK 99518 (907) 561-2120
1321 Bannock Street, Suite 200 Denver, CO 80204 (303) 825-3800

Sample Identity	Lab No.	Time	Date Sampled	Analysis Parameters/Sample Container Description							Total Number of Containers	Remarks/Matrix
				Comp.	Grab	Geo	VOCs	8260c	PAH - LV	THX		
17863 - G5 ^{TWC} G4	① A-J	1325	5/17/17	✓	X	X	X	X			10	WATER SAMPLE
17863 - G5	② A-J	1250	↓	✓	X	X	X	X			10	↓
17863 - G15	③ A-J	1300		✓	X	X	X	X			10	
17863 - WTB	④ A-F	1400			X	X					6	

Project Information		Sample Receipt	
Project Number: <u>32-1-17863</u>	Total Number of Containers	COC Seals/Intact? Y/N/NA	
Project Name: <u>45A BLUFF ROAD</u>	Received Good Cond./Cold	Delivery Method:	
Contact: <u>TWC, MSH</u>	Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	(attach shipping bill, if any)	
Sampler: <u>TWC</u>			

Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Signature: <u>[Signature]</u>	Time: <u>16:04</u>	Signature:	Time:	Signature:	Time:
Printed Name: <u>TREVOR CROWBY</u>	Date: <u>5/17/17</u>	Printed Name:	Date:	Printed Name:	Date:
Company: <u>SW</u>		Company:		Company:	
Received By: 1.		Received By: 2.		Received By: 3.	
Signature:	Time:	Signature:	Time:	Signature: <u>Annie Collie</u>	Time: <u>16:04</u>
Printed Name:	Date:	Printed Name:	Date:	Printed Name: <u>Annie Collie</u>	Date: <u>5/17/17</u>
Company:		Company:		Company: <u>SGS TR 3.4 #D11 QS ABSENT H.D.</u>	

Instructions	
Requested Turnaround Time: <u>STANDARD</u>	
Special Instructions:	
<u>LEVEL II DELIVERABLES.</u>	

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File



e-Sample Receipt Form

SGS Workorder #:

1172455



1 1 7 2 4 5 5

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	<input checked="" type="checkbox"/>	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	<input type="checkbox"/> n/a	ABSENT
COC accompanied samples?	<input checked="" type="checkbox"/> yes	
<input type="checkbox"/> n/a	**Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/> yes	Cooler ID: 1 @ 3.4 °C Therm. ID: D11
	<input type="checkbox"/> n/a	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/> n/a	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/> n/a	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/> n/a	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	<input type="checkbox"/> n/a	
If <0°C, were sample containers ice free?	<input type="checkbox"/> n/a	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements	Note: Refer to form F-083 "Sample Guide" for specific holding times.	
Were samples received within holding time?	<input checked="" type="checkbox"/> yes	
Do samples match COC ** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/> yes	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	<input checked="" type="checkbox"/> yes	
Were proper containers (type/mass/volume/preservative***) used?	<input type="checkbox"/> no	<input type="checkbox"/> n/a ***Exemption permitted for metals (e.g.200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/> yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/> yes	
Were all soil VOAs field extracted with MeOH+BFB?	<input type="checkbox"/> n/a	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		
Samples 2H, 3G, and 3H for DRO/RRO analysis were received underpreserved. 2 mL of HCl was added to each. LOT: LW09-0463-12-17. Preservation was met for each.		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1172455001-A	HCL to pH < 2	OK			
1172455001-B	HCL to pH < 2	OK			
1172455001-C	HCL to pH < 2	OK			
1172455001-D	HCL to pH < 2	OK			
1172455001-E	HCL to pH < 2	OK			
1172455001-F	HCL to pH < 2	OK			
1172455001-G	HCL to pH < 2	OK			
1172455001-H	HCL to pH < 2	OK			
1172455001-I	No Preservative Required	OK			
1172455001-J	No Preservative Required	OK			
1172455002-A	HCL to pH < 2	OK			
1172455002-B	HCL to pH < 2	OK			
1172455002-C	HCL to pH < 2	OK			
1172455002-D	HCL to pH < 2	OK			
1172455002-E	HCL to pH < 2	OK			
1172455002-F	HCL to pH < 2	OK			
1172455002-G	HCL to pH < 2	OK			
1172455002-H	HCL to pH < 2	PA			
1172455002-I	No Preservative Required	OK			
1172455002-J	No Preservative Required	OK			
1172455003-A	HCL to pH < 2	OK			
1172455003-B	HCL to pH < 2	OK			
1172455003-C	HCL to pH < 2	OK			
1172455003-D	HCL to pH < 2	OK			
1172455003-E	HCL to pH < 2	OK			
1172455003-F	HCL to pH < 2	OK			
1172455003-G	HCL to pH < 2	PA			
1172455003-H	HCL to pH < 2	PA			
1172455003-I	No Preservative Required	OK			
1172455003-J	No Preservative Required	OK			
1172455004-A	HCL to pH < 2	OK			
1172455004-B	HCL to pH < 2	OK			
1172455004-C	HCL to pH < 2	OK			
1172455004-D	HCL to pH < 2	OK			
1172455004-E	HCL to pH < 2	OK			
1172455004-F	HCL to pH < 2	OK			

Container Id Preservative

Container
Condition

Container Id Preservative

Container
Condition

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Environmental Management Plan, 459 Bluff Road, Anchorage, Alaska

Date: June 2017

Laboratory Report Date: May 25, 2017

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Trevor Crosby

Title: Environmental Scientist

Laboratory Name: SGS North America Inc.

Work Order Number: 1172455

ADEC File Number: 2100.38.321

(NOTE: NA = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No / NA (Please explain.)

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS-approved?

Yes / No / **NA**

Comments: *The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.*

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes / No / NA (Please explain.)

Comments:

- b. Correct analyses requested? **Yes** / No / NA (Please explain.)

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ}$ C)?

Yes / No / NA (Please explain.)

Comments: *The temperature blank was documented as 3.4° C.*

- b. Sample preservation acceptable - acidified waters, Methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes** **No** / NA (Please explain.)
Comments: *DRO/RRO sample containers needed additional HCL for project Samples G5 and G15 to reduce the pH levels to less than 2.*
- c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes** / No / NA (Please explain.)
Comments: *The sample receipt form notes that the samples were received in good condition.*
- d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? **Yes** / No / **NA** (Please explain.)
Comments: *Sample preservation was documented on the sample receipt form.*
- e. Data quality or usability affected? **Yes** **No** (Please Explain.)
Comments: *It is standard procedure for the laboratory to add additional HCL to DRO/RRO samples upon receipt when the initial preservative did not bring the pH level to less than 2, therefore the data quality/usability are not affected.*

4. Case Narrative

- a. Present and understandable? **Yes** / No / NA (Please explain.)
Comments:
- b. Discrepancies, errors or QC failures noted by the lab? **Yes** / No / NA (Please explain.)
Comments: *The case narrative notes that:*
- *DRO surrogate 5a-androstane recovery for Project Samples G4, G5, and G15 (Duplicate Sample of G5) do not meet the QC criteria. The samples were re-extracted within hold time with surrogate recovery for 5a-androstane still not meeting QC criteria. Result were comparable; the original results are reported.*
 - *RRO surrogate n-triacontane recovery for Project Samples G4, G5, and G15 (Duplicate Sample of G5) do not meet the QC criteria. The samples were re-extracted within hold time with surrogate recovery for n-triacontane still not meeting QC criteria. Result were comparable; the original results are reported.*
 - *VOC surrogate 4-bromofluorobenzene recovery for Project Samples G4, G5, and G15 (Duplicate Sample of G5) does not meet the QC criteria due to matrix interference.*
 - *PAH surrogate recoveries for terphenyl-d14 and 2-fluorobiphenyl for Project Samples G4, G5, and G15 do not meet QC criteria due to sample dilution.*
 - *The LCS/LCSD recovery for vinyl chloride does not meet QC criteria. This analyte was not reported above the LOQ in the associated samples.*

- c. Were corrective actions documented? **Yes** / No / NA (Please explain.)

Comments:

- *The DRO/RRO samples were re-extracted within hold time with surrogate recovery for 5 α -androstane still not meeting QC criteria. Results were comparable; the original results are reported.*

- d. What is the effect on data quality/usability, according to the case narrative?

Comments: *The case narrative does not discuss data quality/usability.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes** / No / NA (Please explain.)

Comments:

- b. All applicable holding times met? **Yes** / No / NA (Please explain.)

Comments:

- c. All soils reported on a dry-weight basis? **Yes** / No / NA (Please explain.)

Comments:

- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? **Yes** / No / NA (Please explain.)

Comments:

- e. Data quality or usability affected? (Please explain.)

Comments: *Data quality/usability is unaffected.*

6. QC Samples

a. Method Blank

- i. One method blank reported per matrix, analysis, and 20 samples?

Yes / No / NA (Please explain.)

Comments:

- ii. All method blank results less than LOQ? **Yes** / No / NA (Please explain.)

Comments: *Although less than the LOQ, an estimated (J-flagged) concentration of DRO (0.186 J mg/kg) was detected in the method blank associated with Samples G4, G5, and G15. DRO concentrations in the project samples associated with the method blank detection are greater than 10x the reported method blank concentration; therefore, the project samples are considered unaffected by the method blank detection.*

- iii. If above LOQ, what samples are affected? NA

Comments:

iv. Do the affected sample(s) have data flags? Yes / No / **NA**

Comments:

If so, are the data flags clearly defined? Yes / No / **NA**

Comments:

v. Data quality or usability affected? **(Please explain.)**

Comments: *Data quality/usability are unaffected; see above.*

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846) **Yes** / No / NA **(Please explain.)**

Comments:

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes** / No / NA **(Please explain.)**

Comments:

iii. Accuracy – All percent recoveries (%R) reported *and* within method or laboratory limits? And project specified DQOs, if applicable. (AK petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages) **Yes** / No / NA **(Please explain.)**

Comments: *The LCS/LCSD recovery for vinyl chloride are outside QC criteria (biased high).*

iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes** / No / NA **(Please explain.)**

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: *Project samples G4, G5, and G15.*

vi. Do the affected samples(s) have data flags? Yes / No / **NA**

Comments:

If so, are the data flags clearly defined? Yes / No / **NA**

Comments:

vii. Data quality or usability affected? Explain.

Comments: *Note that concentrations of vinyl chloride were not detected in the project samples. Therefore, the project samples are considered unaffected.*

c. Surrogates - Organics Only

- i. Are surrogate recoveries reported for organic analyses, field, QC, and laboratory samples? **Yes** / No / NA (Please explain.)

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) Yes / **No** / NA (Please explain.)

Comments:

- Recovery of DRO and RRO surrogates 5 α -androstane and n-triacontane for Project Samples G4, G5, and G15 (Duplicate Sample of G5) are below QC criteria.
- Recovery of VOC surrogate 4-bromofluorobenzene for Project Sample G4 is below QC criteria. Recovery of VOC surrogate 4-bromofluorobenzene for Project Samples G5 and G15 (Duplicate Sample of G5) are above QC criteria.
- Recovery of PAH surrogates terphenyl-d14 and 2-fluorobiphenyl for Project Samples G4, G5, and G15 (Duplicate Sample of G5) are below QC criteria.

- iii. Do the sample results with failed surrogate recoveries have data flags? Yes **No** / NA (Please explain.)

Comments:

- Project samples affected by surrogate recovery failures due to matrix interference are flagged “J+” or “J-” on Tables 2, 3, and 4 of the report.

If so, are the data flags clearly defined? Yes / No / **NA**

Comments:

- iv. Data quality or usability affected? Explain.

Comments: *The flagged data are considered estimates biased low or high.*

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

- i. One trip blank reported per matrix, analysis and cooler? **Yes** / No / NA (Please explain.)

Comments: *One water trip blank was submitted to the laboratory with the project samples.*

- ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? Yes / **No** / NA (Please explain if NA or no.)

Comments: *All samples were transported in one cooler.*

- iii. All results less than LOQ? **Yes** / No / NA (Please explain.)

Comments:

iv. If above LOQ, what samples are affected?

Comments:

v. Data quality or usability affected? Explain.

Comments: *Data quality/usability is unaffected.*

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes / No / NA (Please explain.)

Comments: *Sample G15 is a field duplicate of Sample G5.*

ii. Were the field duplicates submitted blind to the lab? **Yes** / No / NA (Please explain.)

Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs?

(Recommended: 30% for water, 50% for soil) **Yes** / No / NA (Please explain.)

Comments:

- *The 4-Isopropyltoluene, isopropylbenzene, n-propylbenzene, and tert-butylbenzene RPDs for the duplicate pair G5/G15 were calculated outside the specified DQO at 48%, 31%, 52%, and 54%, respectively.*
- *The affected results for the duplicate pairs are flagged “E” to indicate estimated results.*

iv. Data quality or usability affected? Explain. **NA**

Comments: *The RPD failures are likely due to non-homogeneous distribution of water samples in the bailer and/or turbidity in the temporary water samples. Affected data are considered estimated results, but still usable for the purposes of this report.*

f. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below)

Yes / No / NA (Please explain.) *An equipment blank was not included in our ADEC-approved work plan.*

i. All results less than LOQ? Yes / No / **NA** (Please explain.)

Comments:

ii. If results are above LOQ, what samples are affected? **NA**

Comments:

iii. Data quality or usability affected? Explain. **NA**

Comments:

Work Order Number: 1172455

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

- a. Are they defined and appropriate? **Yes** / No / NA

Comments: *Laboratory-specific flags are defined on page 3 of the laboratory report.*

APPENDIX E
REGULATORY APPROVAL DOCUMENTS FOR CONTAMINATED SOIL TREAT
AND TRANSPORT



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
 DIVISION OF SPILL PREVENTION AND RESPONSE
 Contaminated Sites and Prevention and Emergency Response Programs
 Transport, Treatment, & Disposal Approval Form for Contaminated Media**

DEC HAZARD/SPILL ID #		NAME OF SPILL OR CONTAMINATED SITE	
Hazard ID: 605		Crowley Facility Port of Anchorage	
SITE OR SPILL LOCATION			
459 Bluff Road, Anchorage, Alaska			
CURRENT LOCATION AND TYPE OF CONTAMINATED MEDIA		SOURCE OF THE CONTAMINATION	
Soil		Unknown / ASTs / fueling operations	
COMPOUNDS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
GRO, VOCs, DRO, RRO, PAHs	N/A	June 2017	
POST TREATMENT ANALYSIS REQUIRED <i>(such as GRO, DRO, RRO, BTEX, and/or Chlorinated Solvents)</i>			
COMMENTS			
The detectable VOCs are non-chlorinated compounds, and are all petroleum-hydrocarbon related VOCs.			

Facility Accepting the Contaminated Media

NAME OF THE FACILITY	PHYSICAL ADDRESS/PHONE NUMBER
Alaska Soil Recycling	2301 Spar Avenue, Anchorage, AK / 907-348-6700

Responsible Party and Contractor Information

BUSINESS/NAME	ADDRESS/PHONE NUMBER
Crowley Fuels, LLC	201 Arctic Slope Avenue, Anchorage, Alaska 99518

 Name of the Person Requesting Approval (printed)

 Title/Association

 Signature

 Date

 Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above-described media for treatment in accordance with the approved facility operations plan. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight/volume receipts of the loads transported to the facility and a post treatment analytical report. If the media is contaminated soil, it shall be transported as a covered load in compliance with 18 AAC 60.015.

 DEC Project Manager Name (printed)

 Project Manager Title

 Signature

 Date

 Phone Number

APPENDIX F

IMPORTANT INFORMATION ABOUT YOUR

GEOTECHNICAL/ENVIRONMENTAL REPORT



Date: June 2017
To: Crowley Fuels, LLC

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland