SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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Transmittal

To: Timothy Woster
1066 Eliz Road
North Pole, AK, 99705

Attn: Mr. Timothy Woster
Date: February 25, 2020
Project: 101607-005

Copies To: Timothy Woster, *PDF by E-mail*

We have enclosed the following items:

Copies	Description
1	Revised PDF *Home Heating-Oil Tank (HHOT) Environmental Services, 1066 Eliz Road, North Pole, Alaska File No. 100.38.215*

These are transmitted by:

☐ E-mail ☐ USPS ☐ Courier ☒ Hand-delivered

Comments:

Revised Well Point (WP) ID's on February 25, 2020.

Please call me at 907-458-3151 or Mark Lockwood at 907-458-3142 if you have any questions. Thank you,

Digitally signed by Sheila Hinckley
Date: 2020.02.25 16:21:19 -09'00'

By: Sheila Hinckley
Title: Environmental Scientist IV

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

December 13, 2018

Timothy Woster
1066 Eliz Road
North Pole, Alaska 99705

Attn: Mr. Timothy Woster

RE: HOME HEATING-OIL TANK (HHOT) ENVIRONMENTAL SERVICES, 1066 ELIZ ROAD, NORTH POLE, ALASKA
ADEC FILE NUMBER 100.38.215

This report summarizes our field efforts conducted on your property at 1066 Eliz Road in North Pole, Alaska (Figure 1). Our objective was to assess current soil and groundwater conditions in the area of the former Home Heating-Oil Tank (HHOT). The data will be used to support a request for site closure with or without intuitional controls (ICs) from the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program. The ADEC requested this information in a letter dated April 12, 2016. We discussed site closure with the ADEC project manager Mr. Shawn Tisdell on several occasions.

PROJECT BACKGROUND

In July 2007, you hired Stanford Construction (SC) to remove and replace your HHOT During removal activities on July 10, 2007, SC personnel noticed a fuel odor. This prompted you to contact us, and to notify the ADEC of the apparent release from your HHOT. Shannon & Wilson assisted you with characterization efforts to determine if spills or releases from the HHOT had affected soil and groundwater. Our efforts included:

- July 11, 2007 - Field-screening the excavation stockpile placed by SC, and the excavation pit;
- July 12, 2007 - Assessing subsurface conditions and field-screening soils during removal of additional contaminated soils remaining in the excavation; provided recommendations to cease excavation based on field screening results.
- July 13, 2007 – Observing the transport (by SC) of approximately 80-cys of contaminated material to OIT for treatment.

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- July 14, 2007 – Collecting samples from the limits of excavation. Observing the installation of a fuel-collection gallery (slotted vertical 1.5-foot-diameter culvert) in the excavation for floating-product removal and collecting product to the extent practible;
- July 14, 2007 - Collecting soil samples from the limits of excavation and from a test pit for analysis of hydrocarbons by an ADEC-approved laboratory;
- September 5, 2007 - Installing and sampling groundwater from two monitoring wells;
- September 5, 2007 - Collecting water samples from the on-site and neighboring drinking water wells; and
- Reporting our findings in our August 2008 report, *Home Heating-Oil Underground Storage Tank Corrective Action and Assessment*.

In our 2008 report, we concluded that soil containing diesel-range organics (DRO) in excess of the ADEC cleanup level (CUL) appeared to be restricted to a narrow zone about 6 feet below ground surface (bgs) on the southern edge of the excavation. DRO was detected at a concentration of 439 mg/kg. Benzene, toluene, ethylbenzene, and xylenes (BTEX) were not detected above ADEC CULs. No analytes were detected in the water samples.

In a letter dated April 12, 2016 and e-mails, the ADEC provided you with guidance for site closure. Their letter provided you with options for closing the 1066 Eliz Road HHOT site with, or without, institutional controls. They determined that additional investigative work would be required to seek closure. In addition, they requested the two on-site monitoring wells and recovery-well culvert be decommissioned as they could provide a pathway for surface contamination to reach the groundwater.

Shannon & Wilson carried out groundwater sampling activities in 2016, from the two on-site monitoring wells, and two residential drinking water wells at 1066 Eliz Road and 1074 Eliz Road. Our February 6, 2017 report, *Environmental Services, 1066 Eliz Road, North Pole, Alaska* concluded that results were not detected for the requested analytes with the exception of DRO. The two onsite monitoring wells contained DRO concentrations below ADEC CULs.

SCOPE OF SERVICES

Our scope of services for this project included:

- Sub-contracting GeoTek Alaska, Inc. (GeoTek) to advance three soil borings to ten feet bgs at the location where DRO contamination above its ADEC CUL was detected in 2007;
- Logging soil profiles, field-screening, and collecting analytical soil samples during the soil boring installation process;
- Advance three temporary well points from each soil boring location and collecting analytical water samples;
- Sub-contracting Design Alaska, Inc. (Design Alaska) to decommission two onsite monitoring wells;
- Submitting this data summary report.

On September 16, 2018, Shannon & Wilson, Inc. personnel performed field activities in accordance with our ADEC approved Work Plan (WP) dated August 16, 2018.

SOIL SAMPLING

Prior to conducting ground penetrating activities, we performed utility locates at the site. We subcontracted GeoTek to advance three soil borings (Figure 2) in the area where DRO contamination above its ADEC CUL was detected in 2007. A photographic log is presented in Attachment A. The soil borings were advanced to the groundwater interface at depths of ten feet bgs. We logged soil borings, presented in Attachment B as graphic boring logs. We collected two primary samples from each boring at depths up to nine feet bgs. The sample depths were determined based on field-screening results from a photoionization detector (PID), presented in Attachment B, along with our sample collection logs.

Soil samples were submitted to SGS North America, Inc. (SGS) for analysis of DRO by Alaska Method AK102; gasoline-range organics (GRO) by AK101; and BTEX by Environmental Protection Agency (EPA) Method SW8260C. One soil sample was submitted additionally for the analysis of volatile organic compounds (VOCs) by EPA SW8260C; and polynuclear aromatic hydrocarbons (PAHs) by the 8270SIM method.

WATER SAMPLING

Concurrent with soil sampling activities, we collected groundwater samples from three temporary well points collocated with the soil borings. GeoTek Alaska drove the three temporary wells to a depth of 11 ft bgs. spanning the water table. We collected water samples using a peristaltic pump with a reduced flow rate to avoid volatilizing the water through air entrainment. Our Well Sampling Logs are presented in Attachment B.

Water samples were submitted to SGS for analysis of DRO by AK102; GRO by AK101; and BTEX by EPA SW8260C One water sample was submitted additionally for the analysis of VOCs by EPA SW8260C; and PAHs by the 8270SIM method.

MONITORING WELL DECOMMISSIONING

Shannon and Wilson and Geotek Alaska decommissioned the onsite monitoring wells (WP-1 and WP-2) in general accordance with ADEC's *Monitoring Well Guidance*, dated September 2016. Both wells were removed by hand and backfilled with bentonite clay to the original ground surface. We understand you will be decommissioning the onsite recovery well culvert.

The goal in decommissioning the onsite monitoring wells recovery culvert is to remove them in a manner that ensures the abandoned borehole is sealed to a lesser permeability than the native soils surrounding the borehole.

RESULTS

We received two laboratory reports from SGS (Work Orders 1189757 and 1189758; Attachment C). Summary tables of soil and water analytical results are included at the end of this report in Tables 1 and 2, respectively. Analytical sample results above ADEC CULs are presented in Figure 2. We also completed ADEC laboratory data-review checklists (LDRC) presented in Attachment D.

We compared soil sample results to 18 AAC 75 *Table B1 Method Two – Soil Cleanup Levels* (Migration to Groundwater) and *Table B2 Method Two – Petroleum Hydrocarbon Cleanup Levels* (Under 40-inch Zone). We compared groundwater sample results to 18 AAC 75 *Table C – Groundwater Cleanup Levels*.

Soil Results

GRO and DRO exceeded the ADEC CULs in the upgradient soil boring location SB18-03 at a depth of 8.0-8.5 feet bgs. DRO exceeded the ADEC CUL in soil boring locations SB18-01 at 5.0-9.0 feet bgs, and SB18-02 at 8.0-8.6 feet bgs. Note that SB18-01 sample depths range between 5 and 9 feet bgs as the ADEC requested analytes required a greater sample volume.

No additional analytes were detected in the current sampling event exceeding ADEC CULs.

Water Results

DRO exceeded the ADEC CUL in the temporary well point upgradient of the former HHOT (TWP18-03). DRO and naphthalene exceeded ADEC CULs in temporary well point TWP18-01.

No additional analytes were detected in the current sampling event exceeding ADEC CULs.

QUALITY ASSURANCE / QUALITY CONTROL

We reviewed analytical results provided by SGS for laboratory quality control (QC) samples and also conducted our own quality assurance (QA) assessment for this project. We reviewed chain-of-custody records and laboratory sample-receipt forms to document that we followed proper custody procedures, met sample-holding times, and kept samples properly chilled (between 0 degrees Celsius [°C] and 6°C) during shipping. Our QA review procedures allow us to document accuracy and precision of analytical data and document that the analyses were sufficiently sensitive to detect analytes at levels below regulatory levels.

For this report, we reviewed soil and water data reported in SGS work orders 1189757 and 1189758, respectively. Laboratory reports contain case narratives, sample-receipt forms, analytical results and a copy of the chain-of-custody form. We consider the results to be acceptable and representative for assessing site conditions at the time and location they were collected. Details regarding results of our QA analyses are presented in the LDRCs (Attachment D).

Our review of the data reveals that some analytical samples experienced method and data-quality failures (surrogate recovery, method blank detection, equipment blank detection, laboratory control sample percent recovery failures, etc.). None of the data-quality failures caused data to be considered unusable.

Four analytes were reported as non-detects but had laboratory reporting limits greater than ADEC CULs; we cannot determine whether these analytes are present in the samples at concentrations less than the reporting limits but greater than the regulatory levels. Analytical results considered affected by method and laboratory data-quality failures are flagged in Tables 1 and 2.

CONCLUSIONS AND RECOMMENDATIONS

DRO was detected at each soil boring location and two temporary well point locations exceeding ADEC CULS. Additionally, naphthalene was detected above the ADEC CUL from the temporary well point nearest the culvert.

The upgradient soil results near the property boundary contain DRO concentrations at levels greater than soil results closest to the former HHOT. Soil and water containing DRO appear restricted to a narrow zone about 5-9 feet bgs on the southern edge of the excavation and upgradient of the source.

Groundwater gradient is to the northwest regionally. The downgradient onsite monitoring wells have not resulted in detections greater than ADEC CULs. VOCs have not been detected in the cross-gradient private drinking water well at 1066 Eliz Road.

The removal of the remaining known extent of contamination would be impractical and would require the removal of a large amount of clean overburden. We request site closure with institutional controls at the former HHOT, to include: the site continues to be listed on the Contaminated Sites database, a deed notification, and limits to future private well installation.

CLOSURE

This report was prepared for the exclusive use of Timothy Woster and his representatives, in accordance with our scope of services. This report should not be used for other purposes without Shannon & Wilson's review. The document "*Important Information about Your Environmental Site Assessment/Evaluation Report*" is presented in Attachment E to help you and others understand the use and limitations of this report. We relied on third party data in our review of site history and offer no assurance of its accuracy.

Our observations represent site conditions as they existed during our sampling activities. Our observations are specific to the locations and times noted herein and may not be applicable to all areas of the site. No number of samples, along with analytical testing, can precisely predict the

characteristics, quality, or distribution of site conditions. Potential variations include, but are not limited to:

- The conditions between sampling points may be different.
- The passage of time or intervening causes (natural and manmade) may result in changes to site conditions.
- Contaminant concentrations may change in response to natural conditions, chemical reactions, and/or other events.
- The presence, distribution, and concentration of contaminants may vary from our sampling locations. Our tests may not represent the highest contaminant concentrations at the site.
- The report should not be used without our approval if any of the following occurs:
- Conditions change due to natural forces or human activity under, at, or adjacent to the site.
- Project details change, or new information becomes available such that our analyses, conclusion, and recommendations may be affected.
- If the site ownership or land use has changed.
- More than ten years has passed since the date of this summary letter report.
- Regulations, laws, or cleanup CULs has changed.

If any of these occur, we should be retained to review the applicability or our analyses, conclusions, and recommendations.

State and/or federal agencies may require reporting of the information included in this report. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study unless specifically requested and

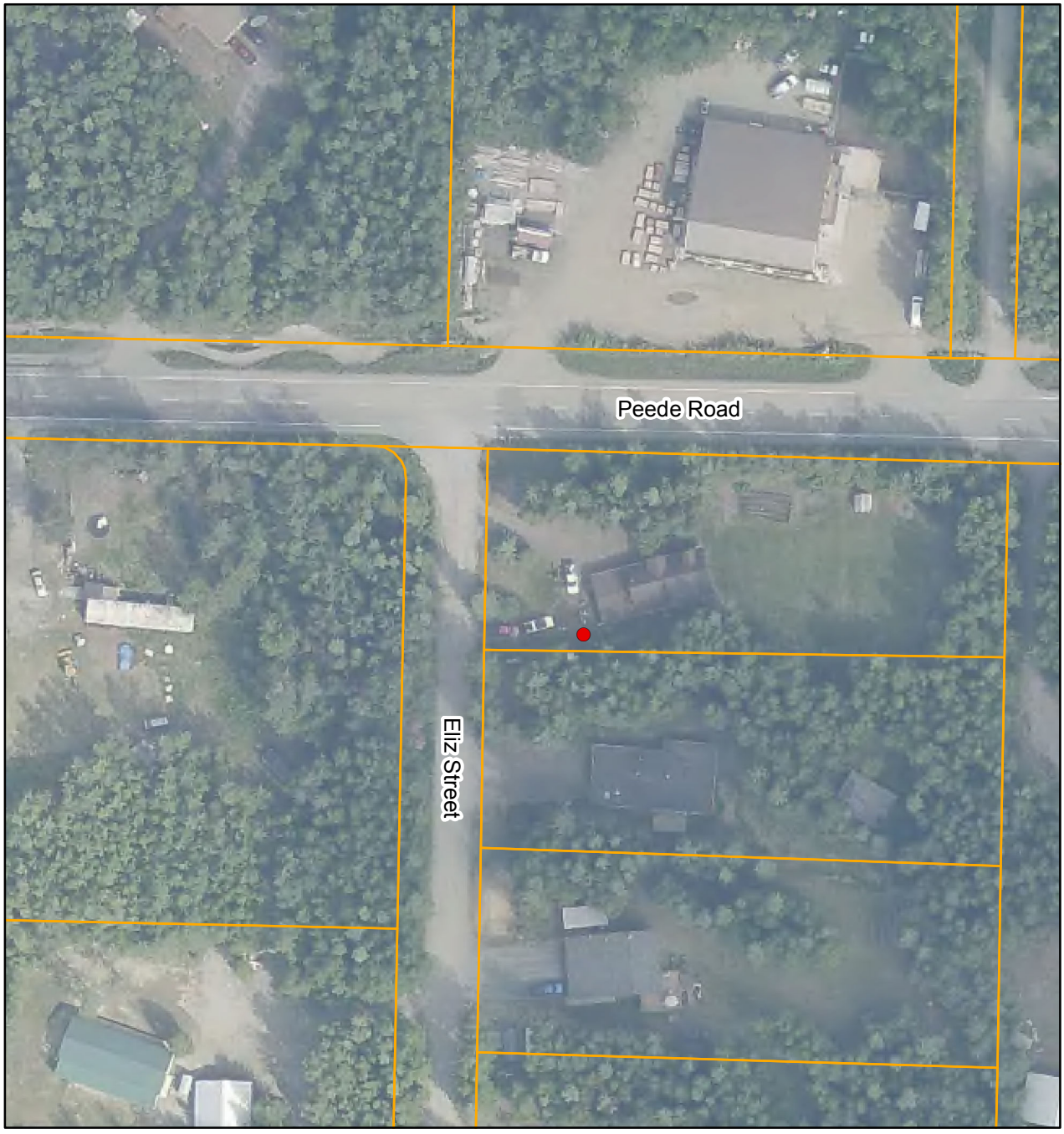
authorized by Timothy Woster, or as required by law. Regulatory agencies may reach different conclusions than Shannon & Wilson.

Sincerely,

SHANNON & WILSON, INC.

Sheila Hinckley
Environmental Scientist

Enc: Figure 1 – Site Vicinity
Figure 2 – Soil and Water Analytical Results Above ADEC Cleanup Level
Table 1 –Soil Analytical Summary
Table 2 –Water Analytical Summary
Attachment A – Project Photographs
Attachment B – Field Forms
Attachment C – SGS Laboratory Data Reports Work Orders (1189757 and 1189758)
Attachment D – ADEC Laboratory Data Review Checklists
Attachment E– *Important Information about your Geotechnical/Environmental Report*

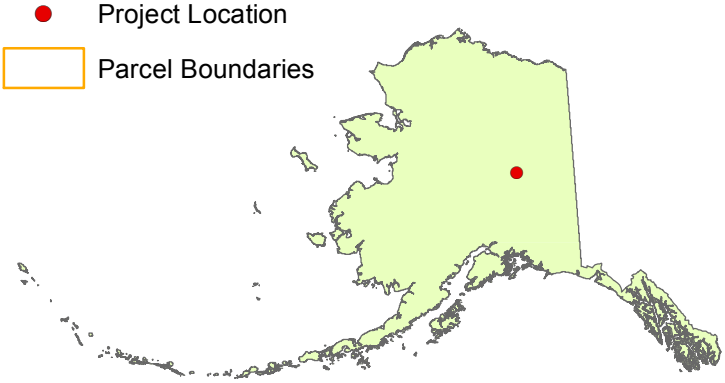


Map adapted from aerial imagery provided by Pictometry International Corporation, 2012.

LEGEND

Project Location

Parcel Boundaries



0 100 200

Feet

N

Home Heating-Oil Tank (HHOT)
Environmental Services, 1066 Eliz,
North Pole, Alaska

SITE VICINITY

December 2018 101607-005

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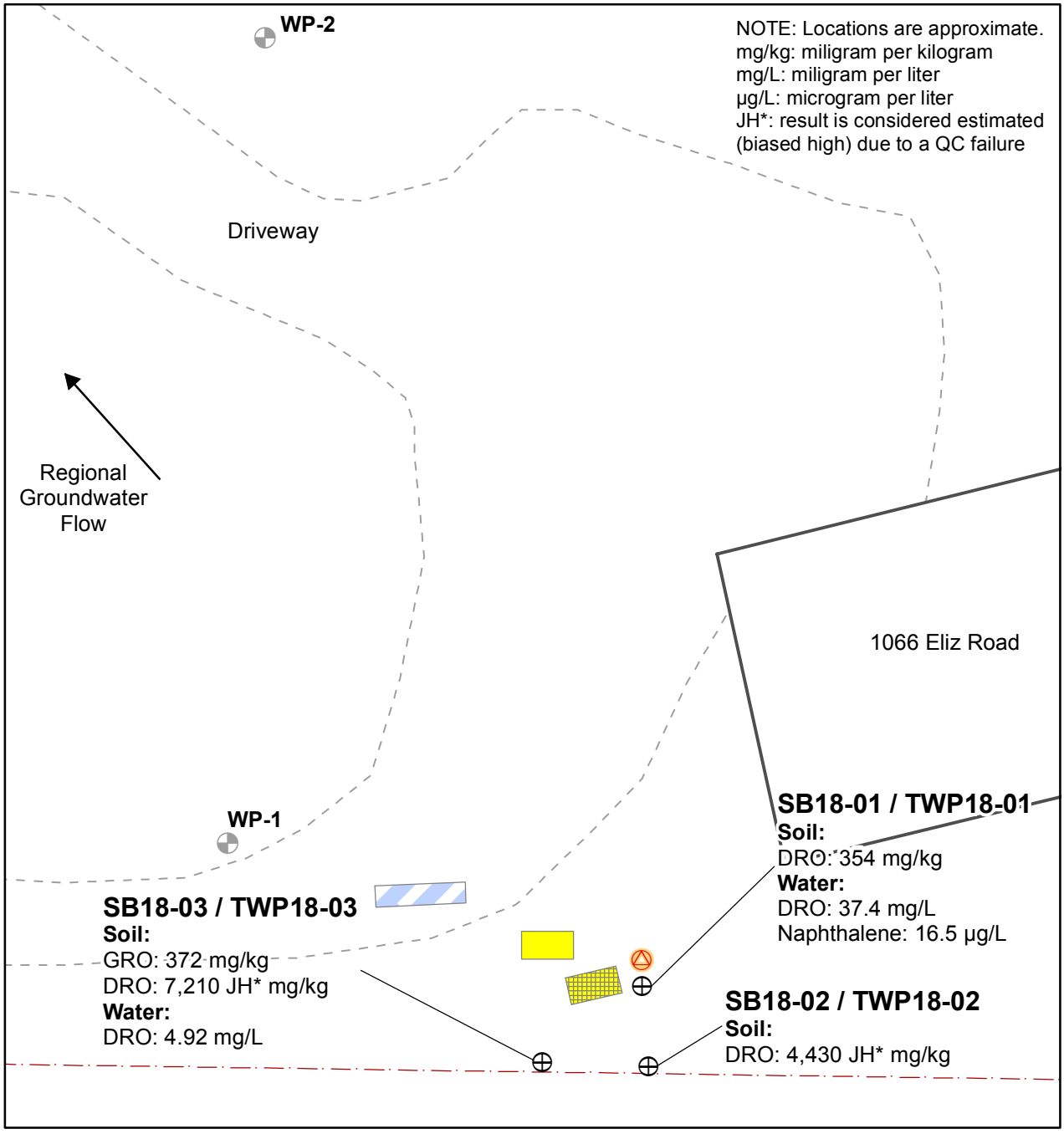
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1



Home Heating-Oil Tank (HHOT) Environmental Services,1066 Eliz Road, North Pole, Alaska

2018 SOIL AND WATER ANALYTICAL RESULTS ABOVE ADEC CLEANUP LEVEL

December 2018 101607-005

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Figure 2

TABLE 1
SOIL ANALYTICAL SUMMARY

Analytical Method	Analyte	ADEC Cleanup Level	Location	*SB18-01*			*SB18-02*		*SB18-03*	
			Sample ID & Depth (ft. bgs)	*SB18-01-01 (0.2 - 0.8)*	*SB18-01-02 (5.0 - 9.0)*	*SB18-01-02 Duplicate*	*SB18-02-01 (2.3 - 2.6)*	*SB18-02-02 (8.0 - 8.6)*	*SB18-03-01 (0.3 - 3.0)*	*SB18-03-02 (8.0 - 8.5)*
			Units							
AK101	Gasoline Range Organics	300	mg/kg	<3.55	—	<1.59	<5.25	102	<3.23	**372**
AK102	Diesel Range Organics	250	mg/kg	<12.4	**326**	**354**	9.33 J	**4430 JH***	162	**7210 JH***
SW8260C (VOCs)	1,1,1,2-Tetrachloroethane	0.022	mg/kg	—	<0.0169	—	—	—	—	—
	1,1,1-Trichloroethane	32	mg/kg	—	<0.0211	—	—	—	—	—
	1,1,2,2-Tetrachloroethane	0.003	mg/kg	—	<0.0106	—	—	—	—	—
	1,1,2-Trichloroethane	0.0014	mg/kg	—	**<0.00845**	—	—	—	—	—
	1,1-Dichloroethane	0.092	mg/kg	—	<0.0211	—	—	—	—	—
	1,1-Dichloroethene	1.2	mg/kg	—	<0.0211	—	—	—	—	—
	1,1-Dichloropropene	NA	mg/kg	—	<0.0211	—	—	—	—	—
	1,2,3-Trichlorobenzene	0.15	mg/kg	—	<0.0423	—	—	—	—	—
	1,2,3-Trichloropropane	0.000031	mg/kg	—	**<0.0211**	—	—	—	—	—
	1,2,4-Trichlorobenzene	0.082	mg/kg	—	<0.0211	—	—	—	—	—
	1,2,4-Trimethylbenzene	0.61	mg/kg	—	<0.0423	—	—	—	—	—
	1,2-Dibromo-3-chloropropane	NA	mg/kg	—	<0.0845	—	—	—	—	—
	1,2-Dibromoethane	0.00024	mg/kg	—	**<0.00845**	—	—	—	—	—
	1,2-Dichlorobenzene	2.4	mg/kg	—	<0.0211	—	—	—	—	—
	1,2-Dichloroethane	0.0055	mg/kg	—	**<0.00845**	—	—	—	—	—
	1,2-Dichloropropane	0.03	mg/kg	—	<0.00845	—	—	—	—	—
	1,3,5-Trimethylbenzene	0.66	mg/kg	—	<0.0211	—	—	—	—	—
	1,3-Dichlorobenzene	2.3	mg/kg	—	<0.0211	—	—	—	—	—
	1,3-Dichloropropane	NA	mg/kg	—	<0.00845	—	—	—	—	—
	1,4-Dichlorobenzene	0.037	mg/kg	—	<0.0211	—	—	—	—	—
	2,2-Dichloropropane	NA	mg/kg	—	<0.0211	—	—	—	—	—
	2-Butanone (MEK)	15	mg/kg	—	<0.211	—	—	—	—	—
	2-Chlorotoluene	NA	mg/kg	—	<0.0211	—	—	—	—	—
	2-Hexanone	0.11	mg/kg	—	<0.0845	—	—	—	—	—
	4-Chlorotoluene	NA	mg/kg	—	<0.0211	—	—	—	—	—
	4-Methyl-2-pentanone (MIBK)	18	mg/kg	—	<0.211	—	—	—	—	—
	Acetone	38	mg/kg	—	<0.211	—	—	—	—	—
	Benzene	0.022	mg/kg	<0.0177	<0.0106	<0.00795	**<0.0262**	<0.00785	<0.0161	**<0.0730**
	Bromobenzene	0.36	mg/kg	—	<0.0211	—	—	—	—	—
	Bromochloromethane	NA	mg/kg	—	<0.0211	—	—	—	—	—
	Bromodichloromethane	0.0043	mg/kg	—	**<0.0211**	—	—	—	—	—
	Bromoform	0.1	mg/kg	—	<0.0211	—	—	—	—	—
	Bromomethane	0.024	mg/kg	—	**<0.169**	—	—	—	—	—
	Carbon disulfide	2.9	mg/kg	—	<0.0845	—	—	—	—	—
	Carbon tetrachloride	0.021	mg/kg	—	<0.0106	—	—	—	—	—
	Chlorobenzene	0.46	mg/kg	—	<0.0211	—	—	—	—	—
	Chloroethane	72	mg/kg	—	<0.169	—	—	—	—	—
	Chloroform	0.0071	mg/kg	—	**<0.0211**	—	—	—	—	—
	Chloromethane	0.61	mg/kg	—	<0.0211	—	—	—	—	—
	cis-1,2-Dichloroethene	0.12	mg/kg	—	<0.0211	—	—	—	—	—
	cis-1,3-Dichloropropene	0.018	mg/kg	—	<0.0106	—	—	—	—	—
	Dibromochloromethane	0.0027	mg/kg	—	**<0.0211**	—	—	—	—	—
	Dibromomethane	0.025	mg/kg	—	<0.0211	—	—	—	—	—
SW8260C (VOCs)	Dichlorodifluoromethane	3.9	mg/kg	—	<0.0423	—	—	—	—	—
	Ethylbenzene	0.13	mg/kg	<0.0355	<0.0211	<0.0159	<0.0525	<0.0157	<0.0323	**<0.146**
	Hexachlorobutadiene	0.02	mg/kg	—	<0.0169	—	—	—	—	—
	Isopropylbenzene	5.6	mg/kg	—	<0.0211	—	—	—	—	—
	Methylene chloride	0.33	mg/kg	—	<0.0845	—	—	—	—	—
	Methyl-t-butyl ether	0.4	mg/kg	—	<0.0845	—	—	—	—	—
	Naphthalene	0.038	mg/kg	—	<0.0211	—	—	—	—	—
	n-Butylbenzene	23	mg/kg	—	<0.0211	—	—	—	—	—
	n-Propylbenzene	9.1	mg/kg	—	<0.0211	—	—	—	—	—
	o-Xylene	1.5 (total)	mg/kg	<0.0355	<0.0211	<0.0159	<0.0525	0.664	<0.0323	0.287 J
	P & M -Xylene		mg/kg	<0.0710	<0.0423	<0.0318	<0.105	0.0516 J	<0.0645	<0.291
	p-Isopropyltoluene	NA	mg/kg	—	<0.0845	—	—	—	—	—
	sec-Butylbenzene	42	mg/kg	—	<0.0211	—	—	—	—	—
	Styrene	10	mg/kg	—	<0.0211	—	—	—	—	—
	tert-Butylbenzene	11	mg/kg	—	<0.0211	—	—	—	—	—
	Tetrachloroethene	0.19	mg/kg	—	<0.0106	—	—	—	—	—
	Toluene	6.7	mg/kg	<0.0355	<0.0211	<0.0159	<0.0525	<0.0157	<0.0323	<0.146
	Total Xylenes	1.5	mg/kg	<0.107	<0.0635	<0.0476	<0.157	0.715	<0.0965	0.287 J
	trans-1,2-Dichloroethene	1.3	mg/kg	—	<0.0211	—	—	—	—	—
	trans-1,3-Dichloropropene	0.018	mg/kg	—	<0.0106	—	—	—	—	—
	Trichloroethene	0.011	mg/kg	—	<0.00845	—	—	—	—	—
	Trichlorofluoromethane	41	mg/kg	—	<0.0423	—	—	—	—	—
	Trichlorotrifluoroethane	310	mg/kg	—	<0.0845	—	—	—	—	—
	Vinyl acetate	1.1	mg/kg	—	<0.0845	—	—	—	—	—
	Vinyl chloride	0.0008	mg/kg	—	**<0.00845**	—	—	—	—	—

TABLE 1
SOIL ANALYTICAL SUMMARY

Analytical Method	Analyte	ADEC Cleanup Level	Location	*SB18-01*			*SB18-02*		*SB18-03*	
			Sample ID & Depth (ft. bgs)	*SB18-01-01 (0.2 - 0.8)*	*SB18-01-02 (5.0 - 9.0)*	*SB18-01-02 Duplicate*	*SB18-02-01 (2.3 - 2.6)*	*SB18-02-02 (8.0 - 8.6)*	*SB18-03-01 (0.3 - 3.0)*	*SB18-03-02 (8.0 - 8.5)*
			Units							
8270D SIM (PAHs)	1-Methylnaphthalene	0.41	mg/kg	—	<0.0129	—	—	—	—	—
	2-Methylnaphthalene	1.3	mg/kg	—	<0.0129	—	—	—	—	—
	Acenaphthene	37	mg/kg	—	<0.0129	—	—	—	—	—
	Acenaphthylene	18	mg/kg	—	<0.0129	—	—	—	—	—
	Anthracene	390	mg/kg	—	<0.0129	—	—	—	—	—
	Benzo(a)anthracene	0.7	mg/kg	—	<0.0129	—	—	—	—	—
	Benzo(a)pyrene	1.9	mg/kg	—	<0.0129	—	—	—	—	—
	Benzo(b)fluoranthene	20	mg/kg	—	<0.0129	—	—	—	—	—
	Benzo(g,h,i)perylene	15,000	mg/kg	—	<0.0129	—	—	—	—	—
	Benzo(k)fluoranthene	190	mg/kg	—	<0.0129	—	—	—	—	—
	Chrysene	600	mg/kg	—	<0.0129	—	—	—	—	—
	Dibenzo(a,h)anthracene	6.3	mg/kg	—	<0.0129	—	—	—	—	—
	Fluoranthene	590	mg/kg	—	<0.0129	—	—	—	—	—
	Fluorene	36	mg/kg	—	<0.0129	—	—	—	—	—
	Indeno(1,2,3-cd)pyrene	65	mg/kg	—	<0.0129	—	—	—	—	—
	Naphthalene	0.038	mg/kg	—	<0.0103	—	—	—	—	—
	Phenanthrene	39	mg/kg	—	<0.0129	—	—	—	—	—
	Pyrene	87	mg/kg	—	<0.0129	—	—	—	—	—

Notes:
ADEC Cleanup Levels from 18 AAC 75.341 Table B1 Method Two-Soil Cleanup Levels Table and Table B2 Method Two-Petroleum Hydrocarbon Soil Cleanup Levels.

mg/kg — milligram per kilogram
ADEC — Alaska Department of Environmental Conservation
ft. bgs — feet below ground surface
VOCs — volatile organic compounds
PAHs — polynuclear aromatic hydrocarbons
NA — Not applicable; the ADEC Cleanup Level is not established for this analyte
< — Analyte not detected; listed as less than the limit of detection (LOD) unless otherwise flagged due to quality-control failures.
— — Analytical sample not collected; analyte not required.
J — Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.
JH* — Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc.
<bold — Reporting limit (LOD) exceeds regulatory limit.
BOLD — Detected concentration exceeds regulatory limit.

TABLE 2
WATER ANALYTICAL SUMMARY

Analytical Method	Analyte	ADEC Cleanup Level	Location	*TWP18-01*		*TWP18-02*	*TWP18-03*
			Sample ID	TWP18-01	TWP18-101 Duplicate	TWP18-02	TWP18-03
			Units				
AK101	Gasoline Range Organics	2.2	mg/L	—	0.683 JH*	0.0866 J	0.111
AK102	Diesel Range Organics	1.5	mg/L	**35.0**	**37.4**	1.39	**4.92**
SW8260C (VOCs)	1,1,1,2-Tetrachloroethane	5.7	µg/L	<0.250	—	—	—
	1,1,1-Trichloroethane	8,000	µg/L	<0.500	—	—	—
	1,1,2,2-Tetrachloroethane	0.76	µg/L	<0.250	—	—	—
	1,1,2-Trichloroethane	0.41	µg/L	<0.200	—	—	—
	1,1-Dichloroethane	28	µg/L	<0.500	—	—	—
	1,1-Dichloroethene	280	µg/L	<0.500	—	—	—
	1,1-Dichloropropene	NA	µg/L	<0.500	—	—	—
	1,2,3-Trichlorobenzene	7	µg/L	<0.500	—	—	—
	1,2,3-Trichloropropane	0.0075	µg/L	**<0.500**	—	—	—
	1,2,4-Trichlorobenzene	4	µg/L	<0.500	—	—	—
	1,2,4-Trimethylbenzene	56	µg/L	16.4	—	—	—
	1,2-Dibromo-3-chloropropane	NA	µg/L	<5.00	—	—	—
	1,2-Dibromoethane	0.075	µg/L	<0.0375	—	—	—
	1,2-Dichlorobenzene	300	µg/L	<0.500	—	—	—
	1,2-Dichloroethane	1.7	µg/L	<0.250	—	—	—
	1,2-Dichloropropane	8.2	µg/L	<0.500	—	—	—
	1,3,5-Trimethylbenzene	60	µg/L	7.95	—	—	—
	1,3-Dichlorobenzene	300	µg/L	<0.500	—	—	—
	1,3-Dichloropropane	NA	µg/L	<0.250	—	—	—
	1,4-Dichlorobenzene	4.8	µg/L	<0.250	—	—	—
	2,2-Dichloropropane	NA	µg/L	<0.500	—	—	—
	2-Butanone (MEK)	5,600	µg/L	4.63J	—	—	—
	2-Chlorotoluene	NA	µg/L	<0.500	—	—	—
	2-Hexanone	38	µg/L	<5.00	—	—	—
	4-Chlorotoluene	NA	µg/L	<0.500	—	—	—
	4-Methyl-2-pentanone (MIBK)	6,300	µg/L	<5.00	—	—	—
	Benzene	4.6	µg/L	2.17	2.69	0.600	<0.200
	Bromobenzene	62	µg/L	<0.500	—	—	—
	Bromochloromethane	NA	µg/L	<0.500	—	—	—
	Bromodichloromethane	1.3	µg/L	<0.250	—	—	—
	Bromoform	33	µg/L	<0.500	—	—	—
	Bromomethane	7.5	µg/L	<2.50	—	—	—
	Carbon disulfide	810	µg/L	<5.00	—	—	—
	Carbon tetrachloride	4.6	µg/L	<0.500	—	—	—
	Chlorobenzene	78	µg/L	<0.250	—	—	—
	Chloroethane	21,000	µg/L	<0.500	—	—	—
	Chloroform	2.2	µg/L	<0.500	—	—	—
	Chloromethane	190	µg/L	0.530 J	—	—	—
	cis-1,2-Dichloroethene	36	µg/L	<0.500	—	—	—
	cis-1,3-Dichloropropene	4.7	µg/L	<0.250	—	—	—
	Dibromochloromethane	8.7	µg/L	<0.250	—	—	—
	Dibromomethane	8.3	µg/L	<0.500	—	—	—
	Dichlorodifluoromethane	200	µg/L	<0.500	—	—	—
	Ethylbenzene	15	µg/L	7.52	9.12	0.750 J	<0.500
	Hexachlorobutadiene	1.4	µg/L	<0.500	—	—	—
	Isopropylbenzene (cumene)	450	µg/L	3.04	—	—	—
	Methylene chloride	110	µg/L	<2.50	—	—	—
	Methyl-t-butyl ether (MTBE)	140	µg/L	<5.00	—	—	—
	Naphthalene	2	µg/L	**16.5**	—	—	—
	n-Butylbenzene	1,000	µg/L	<0.500	—	—	—
	n-Propylbenzene	660	µg/L	4.95	—	—	—
	o-Xylene	190	µg/L	0.320 J	0.360 J	7.32	0.450 J
	P & M -Xylene	190	µg/L	7.03	8.52	1.00 J	<1.00
	p-Isopropyltoluene	NA	µg/L	1.38	—	—	—
	sec-Butylbenzene	2,000	µg/L	1.57	—	—	—
	Styrene	1,200	µg/L	<0.500	—	—	—
	tert-Butylbenzene	690	µg/L	<0.500	—	—	—
	Tetrachloroethene	41	µg/L	<0.500	—	—	—
	Toluene	1,100	µg/L	<0.500	<0.500	<0.500	<0.500
	Total Xylenes	190	µg/L	7.35	8.88	8.32	<1.50
	trans-1,2-Dichloroethene	360	µg/L	<0.500	—	—	—
	trans-1,3-Dichloropropene	5	µg/L	<0.500	—	—	—
	Trichloroethene	3	µg/L	<0.500	—	—	—
	Trichlorofluoromethane	5,200	µg/L	<0.500	—	—	—
	Trichlorotrifluoroethane	10,000	µg/L	<5.00	—	—	—
	Vinyl acetate	410	µg/L	<5.00	—	—	—
	Vinyl chloride	0.19	µg/L	<0.0750	—	—	—

TABLE 2
WATER ANALYTICAL SUMMARY

Analytical Method	Analyte	ADEC Cleanup Level	Location	*TWP18-01*		*TWP18-02*	*TWP18-03*
			Sample ID	TWP18-01	TWP18-101 Duplicate	TWP18-02	TWP18-03
			Units				
8270D SIM LV (PAH)	1-Methylnaphthalene	11	µg/L	2.27 JL*	—	—	—
	2-Methylnaphthalene	36	µg/L	1.51 JL*	—	—	—
	Acenaphthene	530	µg/L	2.10 JL*	—	—	—
	Acenaphthylene	260	µg/L	<0.0232 J*	—	—	—
	Anthracene	43	µg/L	<0.0232 J*	—	—	—
	Benzo(a)anthracene	0.3	µg/L	<0.0232 J*	—	—	—
	Benzo(a)pyrene	0.25	µg/L	<0.00925 J*	—	—	—
	Benzo(b)fluoranthene	2.5	µg/L	<0.0232 J*	—	—	—
	Benzo(g,h,i)perylene	0.26	µg/L	<0.0232 J*	—	—	—
	Benzo(k)fluoranthene	0.8	µg/L	<0.0232 J*	—	—	—
	Chrysene	2	µg/L	<0.0232 J*	—	—	—
	Dibenzo(a,h)anthracene	0.25	µg/L	<0.00925 J*	—	—	—
	Fluoranthene	260	µg/L	<0.0232 J*	—	—	—
	Fluorene	290	µg/L	<0.0232 J*	—	—	—
	Indeno(1,2,3-cd)pyrene	0.19	µg/L	<0.0232 J*	—	—	—
	Naphthalene	1.7	µg/L	**3.54 JL***	—	—	—
	Phenanthrene	170	µg/L	0.755 JL*	—	—	—
	Pyrene	120	µg/L	<0.0232 J*	—	—	—

Notes:
ADEC Cleanup Levels from 18 AAC 75.345, Table C.

mg/L	milligrams per liter
µg/L	microgram per liter
ADEC	Alaska Department of Environmental Conservation
VOCs	volatile organic compounds
PAHs	polynuclear aromatic hydrocarbons
NA	Not applicable; the ADEC Cleanup Level is not established for this analyte
<	Analyte not detected; listed as less than the limit of detection (LOD) unless otherwise flagged due to quality-control failures.
—	Analytical sample not collected; analyte not required.
J	Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
JL*	Estimated concentration, biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc.
JH*	Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc.
bold	Reporting limit (LOD) exceeds regulatory limit.
BOLD	Detected concentration exceeds regulatory limit.

ATTACHMENT A

PHOTOGRAPHIC LOG

Photo 1: Utility locates completed (Facing west)

Photo 2: Underground storage tank and culvert (Facing west)

Photo 3: Site Excavation photo (Facing east, predating 2018)

Photo 4: Underground storage tank and culvert (Facing north)

Photo 5: Onsite monitoring well WP-1 (Facing north)

Photo 6: Onsite monitoring well WP-2 in foreground (Facing north west)

Photo 7: Soil Boring SB18 01-01 (Depth 0.2 – 0.8 feet bgs)

Photo 10: Soil Boring SB18 02-02 (Depth 8.0 – 8.6 feet bgs)

Photo 8: Soil Boring SB18 01-02 (Depth 5.0 – 9.0 feet bgs)

Photo 11: Soil Boring SB18 03-01 (Depth 0.3 – 3.0 feet bgs)

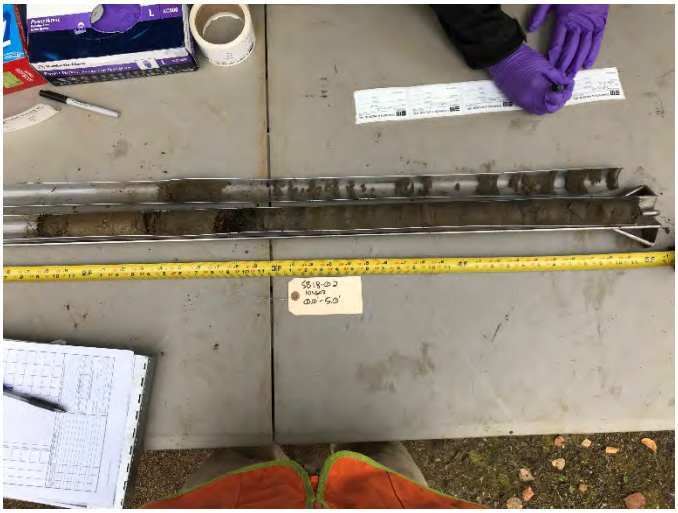


Photo 9: Soil Boring SB18 02-01 (Depth 2.3 – 2.6 feet bgs)

Photo 12: Soil Boring SB18 03-02 (Depth 8.0 – 8.5 feet bgs)

ATTACHMENT B

FIELD FORMS

FIELD ACTIVITIES DAILY LOG

Date 9/16/2018
Sheet 1 of 1
Project No. 101607

Project Name: 1066 ELIZ
Field activity subject: Soil Borings & Temporary Well Point Sampling
Description of daily activities and events: 0615 - Calibrate YSI & PID
0640 - Depart office
0700 - Meet w/ drillers
0710 - Arrive on site
- Drill SB18-01
Set TWP-01
- Collect samples
- Drill SB18-02
Set TWP-02
- Collect samples
- Drill SB18-03
Set TWP-03
- Collect samples
- Remove MW-1 & MW-2
- Both 10' wells, fully removed.
- All holes filled w/ bentonite
- Purge water/Decon water run through GAC #1
- Soil containerized in buckets
1205 - Depart site
1225 - Arrive at office, unload truck, Finalize paperwork.

Visitors on site: —

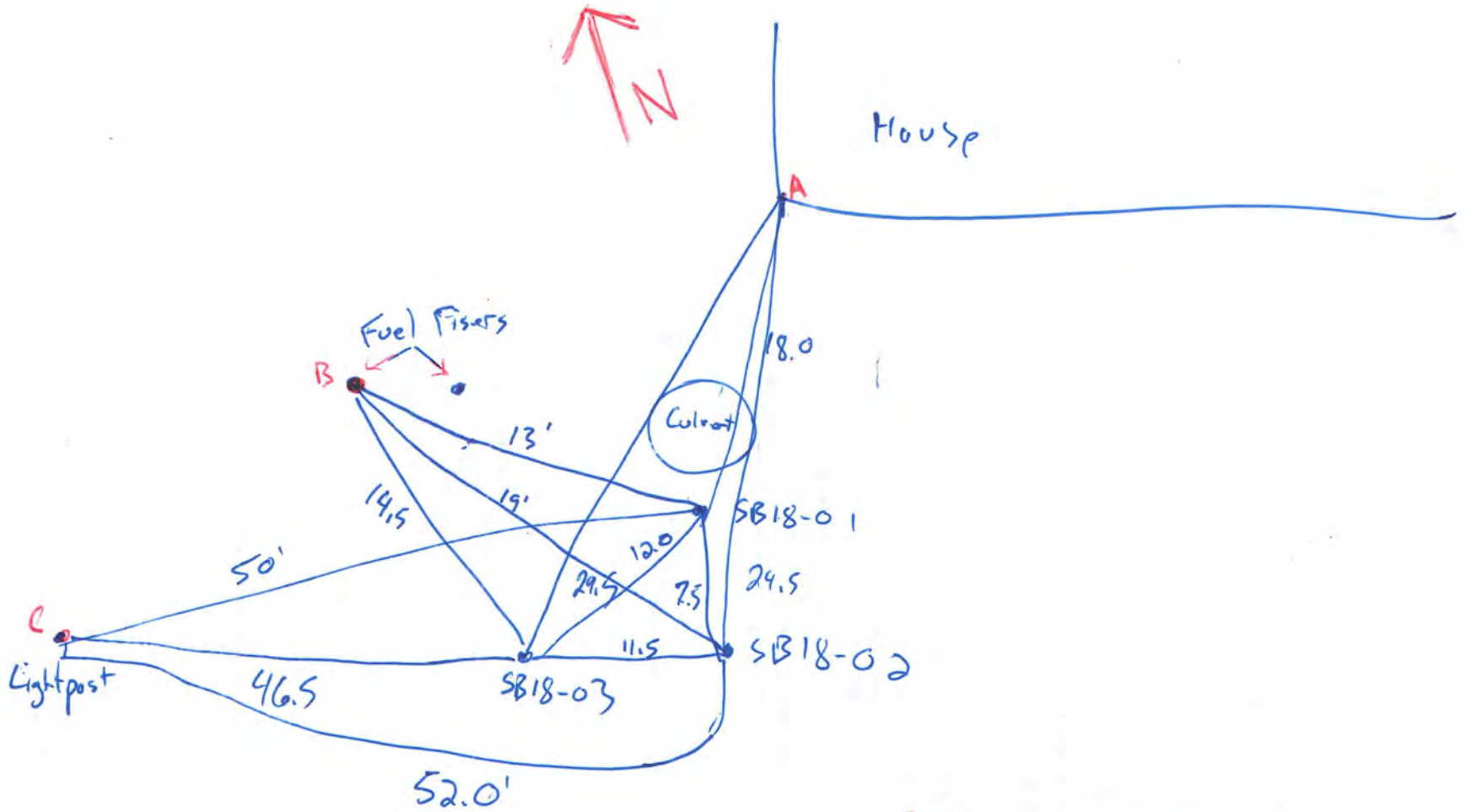
Changes from plans/specifications and other special orders and important decisions:
—

Weather conditions: Cloudy, 40°F

Important telephone calls: —

Personnel on site: CAB, SXS
Signature: [signature]
Date: 9/16/2018

SMH



	A	B	C	SB18-01	SB18-02	SB18-03
SB18-01	18.0'	13.0'	50.0'	—	7.5'	12.0'
SB18-02	24.5'	19.0'	52.0'	7.5'		11.5'
SB18-03	29.5'	14.5'	46.5'	12.0'	11.5'	

LOG OF GEOPROBE

Date Started *9/16/18*	**Location** *3 Feet South of Culvert*	**Ground Elevation:** *Approx. NA feet*	
Date Completed *9/16/18*		**Typical Run Length** *5 feet*	
Total Depth (ft) *10.0*	**Drilling Company:** *GeoTek Alaska*	**Hole Diameter:** *2.25 inches*	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number and Description.	Depth (ft)
		Loose, brown, *Organic Mat (Topsoil)*; moist.	0.1					
		Loose, brown, *Silt (ML)*; moist; trace subangular to subrounded gravel; trace subangular to subrounded sand.					SB18-01-01	
		Loose, brown to gray, *Poorly Graded Gravel with Sand (GP)*; wet at 9.0 feet; subangular to subrounded gravel; subangular to subrounded sand; trace fines; hydrocarbon oder present	3.3					
5								5
						During Drilling ▽	SB18-01-02 / SB18-101-02	
10			10.0					10

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.

LEGEND

▽ Estimated Water Level

UST Release Investigation
1066 Eliz Street
North Pole, Alaska

LOG OF GEOPROBE SB18-01

September 2018 101607

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. X

REV 1

GEOPROBE - AK 101607.GPJ 21-16604.GPJ 9/19/18 Log: CAB Rev: Typ: CAB

LOG OF GEOPROBE

Date Started: 9/16/18	Location: 10.5 Feet South of Culvert	Ground Elevation: Approx. NA feet
Date Completed: 9/16/18		Typical Run Length: 5 feet
Total Depth (ft): 10.0	Drilling Company: GeoTek Alaska	Hole Diameter: 2.25 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number and Description.	Depth (ft)
		Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.						
		Loose, brown, *Organic Mat (Topsoil)*; moist.	0.1					
		Loose, brown, *Silt (ML)*; moist.						
		Loose, brown, *Silt with Sand (ML)* interbedded with *Silty Sand (SM)*; moist; 3-inch thick layers of silt consist of 20% fine to medium, subangular to subrounded sand; 80% nonplastic fines; 1-inch thick sand layers consist of 80% fine to medium, subangular to subrounded sand; 20% nonplastic fines.	2.4				SB18-02-01	
5		Loose, brown to gray, *Poorly Graded Gravel with Sand (GP)*; wet at 8.7 feet; subangular to subrounded gravel; subangular to subrounded sand; trace fines; hydrocarbon oder present at 8.6 to 9.3 feet.	5.0			During Drilling ▽	SB18-02-02	5
10			10.0					10

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.

LEGEND

▽ Estimated Water Level

UST Release Investigation
1066 Eliz Street
North Pole, Alaska

LOG OF GEOPROBE SB18-02

September 2018 101607

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. X

REV 1

GEOPROBE - AK 101607.GPJ 21-16604.GPJ 9/19/18 Log: CAB Rev: Typ: CAB

LOG OF GEOPROBE

Date Started: 9/16/18	Location: 14 Feet South Southwest of Culvert	Ground Elevation: Approx. NA feet
Date Completed: 9/16/18		Typical Run Length: 5 feet
Total Depth (ft): 10.0	Drilling Company: GeoTek Alaska	Hole Diameter: 2.25 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number and Description.	Depth (ft)
		Loose, brown, *Organic Mat (Topsoil)*; moist.	0.1					
		Loose, brown, *Silt (ML)*; moist; trace subangular to subrounded sand.						
		Loose, brown, *Silt with Sand (ML)* interbedded with *Silty Sand (SM)*; moist; 3-inch thick layers of silt consist of 20% fine to medium, subangular to subrounded sand; 80% nonplastic fines; 1-inch thick sand layers consist of 80% fine to medium, subangular to subrounded sand; 20% nonplastic fines.	3.1				SB18-03-01	
5								5
		Loose, brown to gray, *Poorly Graded Gravel with Sand (GP)*; wet at 8.55 feet; subangular to subrounded gravel; subangular to subrounded sand; trace fines; hydrocarbon oder present throughout; Hydrocarbon sheen observed at 9.2 to 9.5 feet.	8.0			▽ During Drilling	SB18-03-02	
10			10.0					10

Soil Description: *Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.*

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.

LEGEND

▽ Estimated Water Level

UST Release Investigation
1066 Eliz Street
North Pole, Alaska

LOG OF GEOPROBE SB18-03

September 2018 101607

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. X

REV 1

GEOPROBE - AK 101607.GPJ 21-16604.GPJ 9/19/18 Log: CAB Rev: Typ: CAB

SHANNON & WILSON, INC.

SAMPLE COLLECTION LOG

Project Number: 101607 Location: 1066 Eliz Road, North Pole Alaska Page 1 of 1

Date: 9/16/2018

Sampler: CAB, JXS

Sample Number	Description	Sample Day	Sample Time	Depth Interval (ft) top	Depth Interval (ft) bottom	Matrix Type	Sample Type	PID Reading	Analyses
01	SB18-01 – Field Screen	9/16/18	750	0.1	3.25	Soil	FS	0.6	—
02	↓		750	3.25	5.0	↓	FS	0.2	—
03	↓		816	5.0	9.0	↓	FS	7.2	—
04	↓		810	9.0	10.0	↓	FS	666.3	— Below GW interface
SB18-01-01	Soil sample, SB18-01		840	0.2	0.8	↓	ES	0.6	BTEX, DRO
SB18-01-02	↓		845	5.0	9.0	↓	ES	7.2	DRO/PAH/VOCs
SB18-101-02	SB18-02 ↓ Duplicate		855	5.0	9.0	↓	~~ES~~FD	7.2	DRO/PAH/VOCs
TWP18-01	sample Water at SB18-02 location		830	—	11	Water	ES	—	DRO/PAH/VOCs
TWP18-101	Water (duplicate of TWP18-01)		840	—	11	↓	~~ES~~FD	—	DRO/PAH/VOCs
						↓	ES	—	SMH
05	SB18-02 Field Screen		916	0.1	3.2	Soil	FS	1.4	—
06	↓		916	3.2	5.0	↓	FS	1.2	—
07	↓		940	5.0	8.7	↓	FS	1782	—
08	↓		940	8.7	10.0	↓	FS	1182	—
SB18-02-01	Soil sample SB18-02		955	2.3	2.6	↓	ES	~~1782~~ 1.4	DRO/BTEX
SB18-02-02	Soil sample SB18-02		1005	8.0	8.6	↓	ES	~~1.8~~ 1782	DRO/BTEX
TWP18-02	sample Water at SB18-02 location		930	—	11	Water	ES	—	DRO/BTEX
09	Field Screening SB18-03		1022	0.0	7.5	Soil	FS	9.0	—
010	↓		1022	7.5	5.0	↓	↓	2.2	—
011	↓		1030	5.0	8.0	↓	↓	1.6	—
012	↓		1030	8.0	8.55	↓	↓	538.9	—
013	↓		1030	8.55	10.0	↓	↓	323.8	—
SB18-03-01	soil sample SB18-03		1055	0.3	3.0	↓	ES	4.0	DRO/BTEX
SB18-03-02	soil sample SB18-03		~~1011~~ 1100	8.0	8.55	↓	ES	538.9	DRO/BTEX
TWP18-03	sample water at SB18-03 location	↓	1045	—	11	water	ES	—	DRO/BTEX

Sample Type FS = Field screening measurement only ES = Environmental sample FD = Field duplicate

Publib/Admin/Forms&Docs/EnvForms/Forms.xls

SMH

MONITORING WELL SAMPLING LOG

Owner/Client Tim ~~Wooster~~ Wooster
Location 1066 Slit Rd
Sampling Personnel JXS + CAB
Weather Conditions Overcast Air Temp. (°F) ~45

Project No. 101607
Date 9/16/18
Well TWP18-01
Time started 0835
Time completed 0855

Sample No. TWP 18-01 Time 0830
Duplicate TWP18-101 Analysis: All Time 0840
Equipment Blank (EB) ← Analysis: Time —

Depth to Water (ft.) ~~NA~~ 9.5
Depth to LNAPL (ft.) —
NAPL Thickness (ft.) —
Method of NAPL Measurement

Pump/Controller Peristaltic
Purging Method (portable) / dedicated pump
Pumping Start 0835
Purge Rate (gal./min.) ~0.1
Pumping End 0855

Pump Set Depth Below MP (ft.) 10.5
KuriTec Tubing (ft.) Ø
TruPoly Tubing (ft.) ~~NA~~ 15
Silicone Tubing (ft.)

Diameter and Type of Casing 1¼ inch
Approximate Total Depth of Well Below MP (ft.) 11
Measured Total Depth of Well Below MP (ft.) 11
Depth to Water Below MP (ft.) 9.5
Depth to Ice (if frozen) Below MP (ft.) —
Feet of Water in Well ~1.5
Gallons per foot 0.08
Gallons in Well 0.12
Gallons in Well x3 = 0.36
(also enter on back) Total Gallons Purged 1.0
Purge Water Disposal GAL

Monument Condition NA
Casing Condition NA
Wiring Condition NA
(dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)
Monument type: Stickup / Flushmount / Temp
Measurement method: Tape measure

Top-of-casing to monument (ft.) NA
Monument to ground surface (ft.) NA

Datalogger Type (circle): RT-100 GW WL-16 AT-200 LT-700 LT-500 Other: HOBO
Datalogger serial #:
Measured cable length (ft)
Temperature Logger Present (TidBit)? Y / N

- ☐ Frost-jacking? Y / N
- ☐ Lock present and operational NA
- ☐ Well name legible on outside of well (stickup) or inside of well (flushmount) NA

Notes Temp well - removed after sample collection

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.01057	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Field Parameter Instrument: *Pro Plus* X OR *Rental #* ___ *Handheld s/n:* ___

Parameter Criteria: Circle One: *Parameters stabilized* OR *> 3 well volumes purged*

Total Gallons purged: ~ 1.0 Gallons needed for 3WV:

Water observations: Initially v. turbid, much less after ~1 min purging – Hydrocarbon odor, slight sheen in purge water

Notes: TWP18-01 S.T. = 0830

TWP18-101 S.T. = 0840

FIELD PARAMETERS [stabilization criteria] 101607

Time	Temp. (°C)	Dissolved Oxygen (mg/L) [± 0.10 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.10]	ORP (mV) [± 10 mV]	Water Clarity (visual)
0835	Purging start time					
0840	4.7	0.87	566	6.05	89.3	Clear
0843	4.7	0.82	556	6.04	91.3	Clear
0846	4.7	0.77	550	6.05	95.7	Clear
0849	4.7	0.71	548	6.06	97.1	Clear
0852	4.7	0.67	551	6.07	97.4	Clear
0855	4.7	0.65	553	6.08	97.5	Clear

Laboratory *SGS*

	Analysis	Sample Containers	Preservatives	Dup	EB
☒	~~Sulfolane (1625B)~~ DRO + RRO	2x (1)-Liter amber bottle	none	☒	☐
☒	~~BTEX~~ (8260B) + GRO/BTEX	3x 40-mL amber VOA vials	HCl	☒	☐
☒	~~Geochem~~ ~~PAHs~~ PAHs	~~Multiple (see proposal)~~ 2x 0.25 Liter amber	~~Multiple~~ none	☒	☐
☐	~~COPC~~ PAHs	Multiple (see proposal)	Multiple	☐	☐
☐				☐	☐
☐				☐	☐

VOCs

0.25

MONITORING WELL SAMPLING LOG

Owner/Client: Tim ~~Webster~~ Woster
Location: 1066 Sl:1 Rd
Sampling Personnel: CAB / JXS
Weather Conditions: Overcast
Air Temp. (°F): ~45
Project No. 101607
Date: 9/16/18
Well: TWP18-02
Time started: 0915
Time completed: 1003

Sample No. TWP18-02 — Time 0930
Duplicate: — Analysis: — Time: —
Equipment Blank (EB): — Analysis: — Time: —
Depth to Water (ft.): ~9.0
Depth to LNAPL (ft.): -
NAPL Thickness (ft.): -
Method of NAPL Measurement: -

Pump/Controller: Peristaltic
Purging Method: portable / dedicated pump
Pumping Start: 0945
Purge Rate (gal./min.): ~0.1
Pumping End: 1003

Diameter and Type of Casing: 1¼-inch
Approximate Total Depth of Well Below MP (ft.): 11
Measured Total Depth of Well Below MP (ft.): 11
Depth to Water Below MP (ft.): 9
Depth to Ice (if frozen) Below MP (ft.): —

Pump Set Depth Below MP (ft.): 10
KuriTec Tubing (ft.): —
TruPoly Tubing (ft.): 15
Silicone Tubing (ft.): —

Feet of Water in Well: 2
Gallons per foot: 0.08
Gallons in Well: 0.16
Gallons in Well x3 = 0.48
(also enter on back) Total Gallons Purged: ~1.5
Purge Water Disposal: GAC

Monument Condition: NA

Casing Condition: NA

Wiring Condition (dedicated pumps): NA

Measuring Point (MP): *Top of Casing (TOC)*
Monument type: *Stickup* / *Flushmount* / Temp
Measurement method: *Tape measure*

Top-of-casing to monument (ft.): NA
Monument to ground surface (ft.): NA

Datalogger Type (circle): *RT-100* *GW WL-16* *AT-200* *LT-700* *LT-500* *Other:* ______ *HOBO*
Datalogger serial #: -
Measured cable length (ft): -

- ☐ Frost-jacking? Y / (N)
- Temperature Logger Present (TidBit)? Y / (N)
- ☐ Lock present and operational NA
- ☐ Well name legible on outside of well (stickup) or inside of well (flushmount) NA

Notes: Temp well - removed after sample collection

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.01057	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Field Parameter Instrument: *Pro Plus* X OR *Rental #* ___ *Handheld s/n:* ___

Parameter Criteria: Circle One: *Parameters stabilized* OR *> 3 well volumes purged*

Total Gallons purged: ~1.5 Gallons needed for 3WV:

Water observations: petroleum hydrocarbon odor / slight sheen

Notes: TWP18-02 S.T. 0930 trace

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C)	Dissolved Oxygen (mg/L) [± 0.10 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.10]	ORP (mV) [± 10 mV]	Water Clarity (visual)
0945	Purging start time					
0948	4.3	1.09	535	6.70	162.4	Sl Turb
0951	3.8	0.50	579	6.54	140.7	Sl Turb
0954	3.6	0.48	596	6.51	129.6	Clear
0957	3.6	0.35	601	6.51	120.1	Clear
1000	3.5	0.36	602	6.50	117.4	Clear
1003	3.5	0.32	602	6.49	114.9	Clear

Laboratory *SGS*

0.35

	Analysis	Sample Containers	Preservatives	Dup	EB
☒	~~Sulfolane (1625B)~~ DRO + RRO	2x 1-Liter amber bottle	none	☐	☐
☒	~~BTEX (8260B)~~ GRO + BTEX (8021)	3x 40-mL amber VOA vials	HCl	☐	☐
☐	Geochem	Multiple (see proposal)	Multiple	☐	☐
☐	COPC	Multiple (see proposal)	Multiple	☐	☐
☐				☐	☐
☐				☐	☐

MONITORING WELL SAMPLING LOG

Owner/Client: Tim ~~Wooster~~ Wooster
Location: 1066 El-3 Rd
Sampling Personnel: CAB + JXS
Weather Conditions: Overcast
Air Temp. (°F): ~45

Project No.: 101607
Date: 9/16/15
Well: TWP18-03
Time started: 1044
Time completed: 1102

Sample No.: TWP18-03
Time: 1045

Duplicate: —
Analysis:
Time: —

Equipment Blank (EB): —
Analysis:
Time: —

Depth to Water (ft.): ~9.0
Depth to LNAPL (ft.): —
NAPL Thickness (ft.): —
Method of NAPL Measurement: —

Pump/Controller: Peristaltic
Purging Method: portable / dedicated pump
Pumping Start: 1044
Purge Rate (gal./min.): ~.1102
Pumping End: ~2.1

Pump Set Depth Below MP (ft.): 10
KuriTec Tubing (ft.): —
TruPoly Tubing (ft.): 15
Silicone Tubing (ft.): —

Diameter and Type of Casing: 1¼-inch
Approximate Total Depth of Well Below MP (ft.): 11
Measured Total Depth of Well Below MP (ft.): 11
Depth to Water Below MP (ft.): 9
Depth to Ice (if frozen) Below MP (ft.): —
Feet of Water in Well: 2
Gallons per foot: 0.08
Gallons in Well: 0.16
Gallons in Well x3 = 0.48
(also enter on back) Total Gallons Purged: 1.5
Purge Water Disposal: GAC

Monument Condition: NA
Casing Condition: NA
Wiring Condition (dedicated pumps): NA

Measuring Point (MP): Top of Casing (TOC)
Monument type: Stickup / Flushmount / Temp
Measurement method: Tape measure

Top-of-casing to monument (ft.): NA
Monument to ground surface (ft.): NA

Datalogger Type (circle): RT-100 GW WL-16 AT-200 LT-700 LT-500 Other: — HOBO
Datalogger serial #: —
Measured cable length (ft): —

☐ Frost-jacking? Y / (N)
☐ Lock present and operational NA
☐ Well name legible on outside of well (stickup) or inside of well (flushmount) NA

Temperature Logger Present (TidBit)? Y / (N)

Notes: Temp Well - removed after sample collection

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.01057	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Field Parameter Instrument: *Pro Plus* X OR *Rental #* ___ *Handheld s/n:* ______

Parameter Criteria: Circle One: *(Parameters stabilized)* OR *> 3 well volumes purged*

Total Gallons purged: ~1.5 Gallons needed for 3WV:

Water observations: V. sl petroleum hydrocarbon odor, trace sheen in sample jars

Notes: S.T. = 1045

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C)	Dissolved Oxygen (mg/L) [± 0.10 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.10]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1044	Purging start time					
1047	4.3	1.26	779	6.40	115.2	Clear
1050	4.0	0.59	757	6.43	95.0	Clear
1053	3.9	0.42	724	6.46	89.3	"
1056	3.8	0.33	697	6.48	78.8	"
1059	3.7	0.29	682	6.49	75.5	"
1102	3.7	0.27	679	6.49	75.1	"

Laboratory *SGS*

0.25

	Analysis	Sample Containers	Preservatives	Dup	EB
☐	~~*Sulfolane (1625B)*~~ DRO + RRO	*2x 1-Liter amber bottle*	*none*	☐	☐
☒	~~*BTEX (8260B)*~~ GRO/BTEX (8021)	*3x 40-mL amber VOA vials*	*HCl*	☐	☐
☐	*Geochem*	*Multiple (see proposal)*	*Multiple*	☐	☐
☐	*COPC*	*Multiple (see proposal)*	*Multiple*	☐	☐
☐				☐	☐
☐				☐	☐

TWP 13-03

ATTACHMENT C

SGS LABORATORYDATA REPORTS WORK ORDERS (1189757 AND 1189758)

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707

Report Number: **1189757**

Client Project: **101607 1066 ELIZ**

Dear Sheila Hinckley,

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 Jennifer 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.

Stephen C. Ede
Alaska Division Technical Director

Stephen Ede
2018.09.27
16:27:23 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: Shannon & Wilson-Fairbanks

SGS Project: 1189757

Project Name/Site: 101607 1066 ELIZ

Refer to sample receipt form for information on sample condition.

SB18-02-02 **1189757005 PS**
AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria. Sample was analyzed twice and results confirmed.

SB18-03-02 **1189757007 PS**
AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.
8260C - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.

Trip Blank **1189757008 TB**
SW8260C - There was insufficient sample volume to perform analysis.

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

Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
8270D SIM (PAH)				
1476238	1185180003MS	XMS11088	Benzo(a)Anthracene	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: 09/27/2018 4:09:06PM

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, indenmification 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) & 17-021 (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	Analytical 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.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
SB18-01-01	1189757001	09/16/2018	09/18/2018	Soil/Solid (dry weight)
SB18-01-02	1189757002	09/16/2018	09/18/2018	Soil/Solid (dry weight)
SB18-101-02	1189757003	09/16/2018	09/18/2018	Soil/Solid (dry weight)
SB18-02-01	1189757004	09/16/2018	09/18/2018	Soil/Solid (dry weight)
SB18-02-02	1189757005	09/16/2018	09/18/2018	Soil/Solid (dry weight)
SB18-03-01	1189757006	09/16/2018	09/18/2018	Soil/Solid (dry weight)
SB18-03-02	1189757007	09/16/2018	09/18/2018	Soil/Solid (dry weight)
Trip Blank	1189757008	09/16/2018	09/18/2018	Soil/Solid (dry weight)

Method	Method Description
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel Range Organics (S)
AK101	Gasoline Range Organics (S)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted
SW8260C	Volatile Organic Compounds (S) FIELD EXT

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Detectable Results Summary

Client Sample ID: **SB18-01-02**
Lab Sample ID: 1189757002
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	326	mg/Kg

Client Sample ID: **SB18-101-02**
Lab Sample ID: 1189757003
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	354	mg/Kg

Client Sample ID: **SB18-02-01**
Lab Sample ID: 1189757004
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	9.33J	mg/Kg

Client Sample ID: **SB18-02-02**
Lab Sample ID: 1189757005
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	4430	mg/Kg
Gasoline Range Organics	102	mg/Kg
o-Xylene	0.664	mg/Kg
P & M -Xylene	0.0516J	mg/Kg
Xylenes (total)	0.715	mg/Kg

Client Sample ID: **SB18-03-01**
Lab Sample ID: 1189757006
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	162	mg/Kg

Client Sample ID: **SB18-03-02**
Lab Sample ID: 1189757007
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	7210	mg/Kg
Gasoline Range Organics	372	mg/Kg
o-Xylene	0.287J	mg/Kg
Xylenes (total)	0.287J	mg/Kg

SGS North America Inc.
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Results of **SB18-01-01**

Client Sample ID: **SB18-01-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757001
Lab Project ID: 1189757

Collection Date: 09/16/18 08:40
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):80.5
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	12.4	U	24.7	7.67	mg/Kg	1		09/19/18 15:50
Surrogates								
5a Androstane (surr)	84.7		50-150		%	1		09/19/18 15:50

Batch Information

Analytical Batch: XFC14618
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 09/19/18 15:50
Container ID: 1189757001-A

Prep Batch: XXX40510
Prep Method: SW3550C
Prep Date/Time: 09/18/18 20:32
Prep Initial Wt./Vol.: 30.129 g
Prep Extract Vol: 5 mL

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Results of **SB18-01-01**

Client Sample ID: **SB18-01-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757001
Lab Project ID: 1189757

Collection Date: 09/16/18 08:40
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):80.5
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.55	U	7.10	2.13	mg/Kg	1		09/20/18 19:52
Surrogates								
4-Bromofluorobenzene (surr)	85.5		50-150		%	1		09/20/18 19:52

Batch Information

Analytical Batch: VFC14445
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/20/18 19:52
Container ID: 1189757001-B

Prep Batch: VXX33160
Prep Method: SW5035A
Prep Date/Time: 09/16/18 08:40
Prep Initial Wt./Vol.: 26.33 g
Prep Extract Vol: 30.1274 mL

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Results of **SB18-01-01**

Client Sample ID: **SB18-01-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757001
Lab Project ID: 1189757

Collection Date: 09/16/18 08:40
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):80.5
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0177	U	0.0355	0.0111	mg/Kg	1		09/22/18 01:40
Ethylbenzene	0.0355	U	0.0710	0.0222	mg/Kg	1		09/22/18 01:40
o-Xylene	0.0355	U	0.0710	0.0222	mg/Kg	1		09/22/18 01:40
P & M -Xylene	0.0710	U	0.142	0.0426	mg/Kg	1		09/22/18 01:40
Toluene	0.0355	U	0.0710	0.0222	mg/Kg	1		09/22/18 01:40
Xylenes (total)	0.107	U	0.213	0.0648	mg/Kg	1		09/22/18 01:40
Surrogates								
1,2-Dichloroethane-D4 (surr)	107		71-136		%	1		09/22/18 01:40
4-Bromofluorobenzene (surr)	82.5		55-151		%	1		09/22/18 01:40
Toluene-d8 (surr)	101		85-116		%	1		09/22/18 01:40

Batch Information

Analytical Batch: VMS18342
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 09/22/18 01:40
Container ID: 1189757001-B

Prep Batch: VXX33169
Prep Method: SW5035A
Prep Date/Time: 09/16/18 08:40
Prep Initial Wt./Vol.: 26.33 g
Prep Extract Vol: 30.1274 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-01-02**

Client Sample ID: **SB18-01-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757002
Lab Project ID: 1189757

Collection Date: 09/16/18 08:45
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):95.7
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
2-Methylnaphthalene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Acenaphthene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Acenaphthylene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Anthracene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Benzo(a)Anthracene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Benzo[a]pyrene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Benzo[b]Fluoranthene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Benzo[g,h,i]perylene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Benzo[k]fluoranthene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Chrysene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Dibenzo[a,h]anthracene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Fluoranthene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Fluorene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Indeno[1,2,3-c,d] pyrene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Naphthalene	0.0103	U	0.0206	0.00516	mg/Kg	1		09/20/18 21:47
Phenanthrene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Pyrene	0.0129	U	0.0258	0.00645	mg/Kg	1		09/20/18 21:47
Surrogates								
2-Methylnaphthalene-d10 (surr)	80.8		58-103		%	1		09/20/18 21:47
Fluoranthene-d10 (surr)	76.2		54-113		%	1		09/20/18 21:47

Batch Information

Analytical Batch: XMS11088
Analytical Method: 8270D SIM (PAH)
Analyst: BMZ
Analytical Date/Time: 09/20/18 21:47
Container ID: 1189757002-A

Prep Batch: XXX40469
Prep Method: SW3550C
Prep Date/Time: 09/19/18 08:34
Prep Initial Wt./Vol.: 22.777 g
Prep Extract Vol: 5 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-01-02**

Client Sample ID: **SB18-01-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757002
Lab Project ID: 1189757

Collection Date: 09/16/18 08:45
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):95.7
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	326		20.8	6.45	mg/Kg	1		09/19/18 15:59
Surrogates								
5a Androstane (surr)	90.2		50-150		%	1		09/19/18 15:59

Batch Information

Analytical Batch: XFC14618
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 09/19/18 15:59
Container ID: 1189757002-A

Prep Batch: XXX40510
Prep Method: SW3550C
Prep Date/Time: 09/18/18 20:32
Prep Initial Wt./Vol.: 30.147 g
Prep Extract Vol: 5 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-01-02**

Client Sample ID: **SB18-01-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757002
Lab Project ID: 1189757

Collection Date: 09/16/18 08:45
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):95.7
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.0169	U	0.0338	0.0105	mg/Kg	1		09/22/18 01:57
1,1,1-Trichloroethane	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
1,1,2,2-Tetrachloroethane	0.0106	U	0.0212	0.00660	mg/Kg	1		09/22/18 01:57
1,1,2-Trichloroethane	0.00845	U	0.0169	0.00525	mg/Kg	1		09/22/18 01:57
1,1-Dichloroethane	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
1,1-Dichloroethene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
1,1-Dichloropropene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
1,2,3-Trichlorobenzene	0.0423	U	0.0846	0.0254	mg/Kg	1		09/22/18 01:57
1,2,3-Trichloropropane	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
1,2,4-Trichlorobenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
1,2,4-Trimethylbenzene	0.0423	U	0.0846	0.0254	mg/Kg	1		09/22/18 01:57
1,2-Dibromo-3-chloropropane	0.0845	U	0.169	0.0525	mg/Kg	1		09/22/18 01:57
1,2-Dibromoethane	0.00845	U	0.0169	0.00525	mg/Kg	1		09/22/18 01:57
1,2-Dichlorobenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
1,2-Dichloroethane	0.00845	U	0.0169	0.00525	mg/Kg	1		09/22/18 01:57
1,2-Dichloropropane	0.00845	U	0.0169	0.00525	mg/Kg	1		09/22/18 01:57
1,3,5-Trimethylbenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
1,3-Dichlorobenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
1,3-Dichloropropane	0.00845	U	0.0169	0.00525	mg/Kg	1		09/22/18 01:57
1,4-Dichlorobenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
2,2-Dichloropropane	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
2-Butanone (MEK)	0.211	U	0.423	0.132	mg/Kg	1		09/22/18 01:57
2-Chlorotoluene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
2-Hexanone	0.0845	U	0.169	0.0525	mg/Kg	1		09/22/18 01:57
4-Chlorotoluene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
4-Isopropyltoluene	0.0845	U	0.169	0.0423	mg/Kg	1		09/22/18 01:57
4-Methyl-2-pentanone (MIBK)	0.211	U	0.423	0.132	mg/Kg	1		09/22/18 01:57
Acetone	0.211	U	0.423	0.132	mg/Kg	1		09/22/18 01:57
Benzene	0.0106	U	0.0212	0.00660	mg/Kg	1		09/22/18 01:57
Bromobenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Bromochloromethane	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Bromodichloromethane	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Bromoform	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Bromomethane	0.169	U	0.338	0.105	mg/Kg	1		09/22/18 01:57
Carbon disulfide	0.0845	U	0.169	0.0525	mg/Kg	1		09/22/18 01:57
Carbon tetrachloride	0.0106	U	0.0212	0.00660	mg/Kg	1		09/22/18 01:57
Chlorobenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57

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J flagging is activated

Results of **SB18-01-02**

Client Sample ID: **SB18-01-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757002
Lab Project ID: 1189757

Collection Date: 09/16/18 08:45
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):95.7
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	0.169	U	0.338	0.105	mg/Kg	1		09/22/18 01:57
Chloroform	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Chloromethane	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
cis-1,2-Dichloroethene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
cis-1,3-Dichloropropene	0.0106	U	0.0212	0.00660	mg/Kg	1		09/22/18 01:57
Dibromochloromethane	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Dibromomethane	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Dichlorodifluoromethane	0.0423	U	0.0846	0.0254	mg/Kg	1		09/22/18 01:57
Ethylbenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Freon-113	0.0845	U	0.169	0.0525	mg/Kg	1		09/22/18 01:57
Hexachlorobutadiene	0.0169	U	0.0338	0.0105	mg/Kg	1		09/22/18 01:57
Isopropylbenzene (Cumene)	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Methylene chloride	0.0845	U	0.169	0.0525	mg/Kg	1		09/22/18 01:57
Methyl-t-butyl ether	0.0845	U	0.169	0.0525	mg/Kg	1		09/22/18 01:57
Naphthalene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
n-Butylbenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
n-Propylbenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
o-Xylene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
P & M -Xylene	0.0423	U	0.0846	0.0254	mg/Kg	1		09/22/18 01:57
sec-Butylbenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Styrene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
tert-Butylbenzene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
Tetrachloroethene	0.0106	U	0.0212	0.00660	mg/Kg	1		09/22/18 01:57
Toluene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
trans-1,2-Dichloroethene	0.0211	U	0.0423	0.0132	mg/Kg	1		09/22/18 01:57
trans-1,3-Dichloropropene	0.0106	U	0.0212	0.00660	mg/Kg	1		09/22/18 01:57
Trichloroethene	0.00845	U	0.0169	0.00525	mg/Kg	1		09/22/18 01:57
Trichlorofluoromethane	0.0423	U	0.0846	0.0254	mg/Kg	1		09/22/18 01:57
Vinyl acetate	0.0845	U	0.169	0.0525	mg/Kg	1		09/22/18 01:57
Vinyl chloride	0.00845	U	0.0169	0.00525	mg/Kg	1		09/22/18 01:57
Xylenes (total)	0.0635	U	0.127	0.0386	mg/Kg	1		09/22/18 01:57
Surrogates								
1,2-Dichloroethane-D4 (surr)	108		71-136		%	1		09/22/18 01:57
4-Bromofluorobenzene (surr)	85.3		55-151		%	1		09/22/18 01:57
Toluene-d8 (surr)	103		85-116		%	1		09/22/18 01:57

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-01-02**

Client Sample ID: **SB18-01-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757002
Lab Project ID: 1189757

Collection Date: 09/16/18 08:45
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):95.7
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18342
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 09/22/18 01:57
Container ID: 1189757002-B

Prep Batch: VXX33169
Prep Method: SW5035A
Prep Date/Time: 09/16/18 08:45
Prep Initial Wt./Vol.: 32.61 g
Prep Extract Vol: 26.405 mL

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Results of **SB18-101-02**

Client Sample ID: **SB18-101-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757003
Lab Project ID: 1189757

Collection Date: 09/16/18 08:55
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):95.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	354		20.6	6.39	mg/Kg	1		09/19/18 16:09
Surrogates								
5a Androstane (surr)	91.8		50-150		%	1		09/19/18 16:09

Batch Information

Analytical Batch: XFC14618
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 09/19/18 16:09
Container ID: 1189757003-A

Prep Batch: XXX40510
Prep Method: SW3550C
Prep Date/Time: 09/18/18 20:32
Prep Initial Wt./Vol.: 30.376 g
Prep Extract Vol: 5 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-101-02**

Client Sample ID: **SB18-101-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757003
Lab Project ID: 1189757

Collection Date: 09/16/18 08:55
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):95.9
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.59	U	3.18	0.953	mg/Kg	1		09/20/18 20:09
Surrogates								
4-Bromofluorobenzene (surr)	83		50-150		%	1		09/20/18 20:09

Batch Information

Analytical Batch: VFC14445
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/20/18 20:09
Container ID: 1189757003-B

Prep Batch: VXX33160
Prep Method: SW5035A
Prep Date/Time: 09/16/18 08:55
Prep Initial Wt./Vol.: 44.023 g
Prep Extract Vol: 26.817 mL

J flagging is activated

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Results of **SB18-101-02**

Client Sample ID: **SB18-101-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757003
Lab Project ID: 1189757

Collection Date: 09/16/18 08:55
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):95.9
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00795	U	0.0159	0.00496	mg/Kg	1		09/22/18 02:14
Ethylbenzene	0.0159	U	0.0318	0.00991	mg/Kg	1		09/22/18 02:14
o-Xylene	0.0159	U	0.0318	0.00991	mg/Kg	1		09/22/18 02:14
P & M -Xylene	0.0318	U	0.0635	0.0191	mg/Kg	1		09/22/18 02:14
Toluene	0.0159	U	0.0318	0.00991	mg/Kg	1		09/22/18 02:14
Xylenes (total)	0.0476	U	0.0953	0.0290	mg/Kg	1		09/22/18 02:14
Surrogates								
1,2-Dichloroethane-D4 (surr)	107		71-136		%	1		09/22/18 02:14
4-Bromofluorobenzene (surr)	81.3		55-151		%	1		09/22/18 02:14
Toluene-d8 (surr)	103		85-116		%	1		09/22/18 02:14

Batch Information

Analytical Batch: VMS18342
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 09/22/18 02:14
Container ID: 1189757003-B

Prep Batch: VXX33169
Prep Method: SW5035A
Prep Date/Time: 09/16/18 08:55
Prep Initial Wt./Vol.: 44.023 g
Prep Extract Vol: 26.817 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-02-01**

Client Sample ID: **SB18-02-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757004
Lab Project ID: 1189757

Collection Date: 09/16/18 09:55
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):81.3
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	9.33	J	24.5	7.60	mg/Kg	1		09/19/18 16:19
Surrogates								
5a Androstane (surr)	84.1		50-150		%	1		09/19/18 16:19

Batch Information

Analytical Batch: XFC14618
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 09/19/18 16:19
Container ID: 1189757004-A

Prep Batch: XXX40510
Prep Method: SW3550C
Prep Date/Time: 09/18/18 20:32
Prep Initial Wt./Vol.: 30.105 g
Prep Extract Vol: 5 mL

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Results of **SB18-02-01**

Client Sample ID: **SB18-02-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757004
Lab Project ID: 1189757

Collection Date: 09/16/18 09:55
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):81.3
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	5.25	U	10.5	3.14	mg/Kg	1		09/20/18 20:27
Surrogates								
4-Bromofluorobenzene (surr)	82.2		50-150		%	1		09/20/18 20:27

Batch Information

Analytical Batch: VFC14445
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/20/18 20:27
Container ID: 1189757004-B

Prep Batch: VXX33160
Prep Method: SW5035A
Prep Date/Time: 09/16/18 09:55
Prep Initial Wt./Vol.: 16.475 g
Prep Extract Vol: 28.0762 mL

J flagging is activated

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Results of **SB18-02-01**

Client Sample ID: **SB18-02-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757004
Lab Project ID: 1189757

Collection Date: 09/16/18 09:55
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):81.3
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0262	U	0.0524	0.0163	mg/Kg	1		09/22/18 02:31
Ethylbenzene	0.0525	U	0.105	0.0327	mg/Kg	1		09/22/18 02:31
o-Xylene	0.0525	U	0.105	0.0327	mg/Kg	1		09/22/18 02:31
P & M -Xylene	0.105	U	0.210	0.0629	mg/Kg	1		09/22/18 02:31
Toluene	0.0525	U	0.105	0.0327	mg/Kg	1		09/22/18 02:31
Xylenes (total)	0.157	U	0.314	0.0956	mg/Kg	1		09/22/18 02:31
Surrogates								
1,2-Dichloroethane-D4 (surr)	109		71-136		%	1		09/22/18 02:31
4-Bromofluorobenzene (surr)	79.5		55-151		%	1		09/22/18 02:31
Toluene-d8 (surr)	102		85-116		%	1		09/22/18 02:31

Batch Information

Analytical Batch: VMS18342
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 09/22/18 02:31
Container ID: 1189757004-B

Prep Batch: VXX33169
Prep Method: SW5035A
Prep Date/Time: 09/16/18 09:55
Prep Initial Wt./Vol.: 16.475 g
Prep Extract Vol: 28.0762 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-02-02**

Client Sample ID: **SB18-02-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757005
Lab Project ID: 1189757

Collection Date: 09/16/18 10:05
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):91.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	4430		86.5	26.8	mg/Kg	4		09/19/18 17:58
Surrogates								
5a Androstane (surr)	87.6		50-150		%	4		09/19/18 17:58

Batch Information

Analytical Batch: XFC14618
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 09/19/18 17:58
Container ID: 1189757005-A

Prep Batch: XXX40510
Prep Method: SW3550C
Prep Date/Time: 09/18/18 20:32
Prep Initial Wt./Vol.: 30.17 g
Prep Extract Vol: 5 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-02-02**

Client Sample ID: **SB18-02-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757005
Lab Project ID: 1189757

Collection Date: 09/16/18 10:05
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):91.9
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	102		15.7	4.72	mg/Kg	5		09/21/18 16:45
Surrogates								
4-Bromofluorobenzene (surr)	1250	*	50-150		%	5		09/21/18 16:45

Batch Information

Analytical Batch: VFC14450
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/21/18 16:45
Container ID: 1189757005-B

Prep Batch: VXX33175
Prep Method: SW5035A
Prep Date/Time: 09/16/18 10:05
Prep Initial Wt./Vol.: 50.306 g
Prep Extract Vol: 29.0683 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-02-02**

Client Sample ID: **SB18-02-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757005
Lab Project ID: 1189757

Collection Date: 09/16/18 10:05
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):91.9
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00785	U	0.0157	0.00490	mg/Kg	1		09/25/18 02:43
Ethylbenzene	0.0157	U	0.0314	0.00981	mg/Kg	1		09/25/18 02:43
o-Xylene	0.664		0.0314	0.00981	mg/Kg	1		09/25/18 02:43
P & M -Xylene	0.0516	J	0.0629	0.0189	mg/Kg	1		09/25/18 02:43
Toluene	0.0157	U	0.0314	0.00981	mg/Kg	1		09/25/18 02:43
Xylenes (total)	0.715		0.0943	0.0287	mg/Kg	1		09/25/18 02:43
Surrogates								
1,2-Dichloroethane-D4 (surr)	104		71-136		%	1		09/25/18 02:43
4-Bromofluorobenzene (surr)	126		55-151		%	1		09/25/18 02:43
Toluene-d8 (surr)	96.7		85-116		%	1		09/25/18 02:43

Batch Information

Analytical Batch: VMS18358
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 09/25/18 02:43
Container ID: 1189757005-B

Prep Batch: VXX33188
Prep Method: SW5035A
Prep Date/Time: 09/16/18 10:05
Prep Initial Wt./Vol.: 50.306 g
Prep Extract Vol: 29.0683 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-03-01**

Client Sample ID: **SB18-03-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757006
Lab Project ID: 1189757

Collection Date: 09/16/18 10:55
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):79.3
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	162		25.2	7.81	mg/Kg	1		09/19/18 16:29
Surrogates								
5a Androstane (surr)	81		50-150		%	1		09/19/18 16:29

Batch Information

Analytical Batch: XFC14618
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 09/19/18 16:29
Container ID: 1189757006-A

Prep Batch: XXX40510
Prep Method: SW3550C
Prep Date/Time: 09/18/18 20:32
Prep Initial Wt./Vol.: 30.05 g
Prep Extract Vol: 5 mL

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Results of **SB18-03-01**

Client Sample ID: **SB18-03-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757006
Lab Project ID: 1189757

Collection Date: 09/16/18 10:55
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):79.3
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.23	U	6.45	1.93	mg/Kg	1		09/20/18 20:45
Surrogates								
4-Bromofluorobenzene (surr)	83.4		50-150		%	1		09/20/18 20:45

Batch Information

Analytical Batch: VFC14445
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/20/18 20:45
Container ID: 1189757006-B

Prep Batch: VXX33160
Prep Method: SW5035A
Prep Date/Time: 09/16/18 10:55
Prep Initial Wt./Vol.: 30.683 g
Prep Extract Vol: 31.3624 mL

J flagging is activated

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Results of **SB18-03-01**

Client Sample ID: **SB18-03-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757006
Lab Project ID: 1189757

Collection Date: 09/16/18 10:55
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):79.3
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0161	U	0.0322	0.0101	mg/Kg	1		09/22/18 02:48
Ethylbenzene	0.0323	U	0.0645	0.0201	mg/Kg	1		09/22/18 02:48
o-Xylene	0.0323	U	0.0645	0.0201	mg/Kg	1		09/22/18 02:48
P & M -Xylene	0.0645	U	0.129	0.0387	mg/Kg	1		09/22/18 02:48
Toluene	0.0323	U	0.0645	0.0201	mg/Kg	1		09/22/18 02:48
Xylenes (total)	0.0965	U	0.193	0.0588	mg/Kg	1		09/22/18 02:48
Surrogates								
1,2-Dichloroethane-D4 (surr)	108		71-136		%	1		09/22/18 02:48
4-Bromofluorobenzene (surr)	85.7		55-151		%	1		09/22/18 02:48
Toluene-d8 (surr)	104		85-116		%	1		09/22/18 02:48

Batch Information

Analytical Batch: VMS18342
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 09/22/18 02:48
Container ID: 1189757006-B

Prep Batch: VXX33169
Prep Method: SW5035A
Prep Date/Time: 09/16/18 10:55
Prep Initial Wt./Vol.: 30.683 g
Prep Extract Vol: 31.3624 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-03-02**

Client Sample ID: **SB18-03-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757007
Lab Project ID: 1189757

Collection Date: 09/16/18 11:00
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):91.5
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	7210		86.9	26.9	mg/Kg	4		09/19/18 18:08
Surrogates								
5a Androstane (surr)	95.2		50-150		%	4		09/19/18 18:08

Batch Information

Analytical Batch: XFC14618
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 09/19/18 18:08
Container ID: 1189757007-A

Prep Batch: XXX40510
Prep Method: SW3550C
Prep Date/Time: 09/18/18 20:32
Prep Initial Wt./Vol.: 30.204 g
Prep Extract Vol: 5 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **SB18-03-02**

Client Sample ID: **SB18-03-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757007
Lab Project ID: 1189757

Collection Date: 09/16/18 11:00
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):91.5
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	372		29.2	8.75	mg/Kg	5		09/20/18 21:03
Surrogates								
4-Bromofluorobenzene (surr)	740	*	50-150		%	5		09/20/18 21:03

Batch Information

Analytical Batch: VFC14445
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/20/18 21:03
Container ID: 1189757007-B

Prep Batch: VXX33160
Prep Method: SW5035A
Prep Date/Time: 09/16/18 11:00
Prep Initial Wt./Vol.: 25.489 g
Prep Extract Vol: 27.1792 mL

J flagging is activated

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Results of **SB18-03-02**

Client Sample ID: **SB18-03-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757007
Lab Project ID: 1189757

Collection Date: 09/16/18 11:00
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):91.5
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0730 U		0.146	0.0455	mg/Kg	5		09/25/18 18:13
Ethylbenzene	0.146 U		0.292	0.0909	mg/Kg	5		09/25/18 18:13
o-Xylene	0.287 J		0.292	0.0909	mg/Kg	5		09/25/18 18:13
P & M -Xylene	0.291 U		0.583	0.175	mg/Kg	5		09/25/18 18:13
Toluene	0.146 U		0.292	0.0909	mg/Kg	5		09/25/18 18:13
Xylenes (total)	0.287 J		0.875	0.266	mg/Kg	5		09/25/18 18:13
Surrogates								
1,2-Dichloroethane-D4 (surr)	97.2		71-136		%	5		09/25/18 18:13
4-Bromofluorobenzene (surr)	197	*	55-151		%	5		09/25/18 18:13
Toluene-d8 (surr)	101		85-116		%	5		09/25/18 18:13

Batch Information

Analytical Batch: VMS18368
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 09/25/18 18:13
Container ID: 1189757007-B

Prep Batch: VXX33203
Prep Method: SW5035A
Prep Date/Time: 09/16/18 11:00
Prep Initial Wt./Vol.: 25.489 g
Prep Extract Vol: 27.1792 mL

Print Date: 09/27/2018 4:09:09PM

J flagging is activated

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189757008
Lab Project ID: 1189757

Collection Date: 09/16/18 08:40
Received Date: 09/18/18 09:45
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.24	U	2.47	0.740	mg/Kg	1		09/19/18 13:36
Surrogates								
4-Bromofluorobenzene (surr)	85.9		50-150		%	1		09/19/18 13:36

Batch Information

Analytical Batch: VFC14444
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/19/18 13:36
Container ID: 1189757008-A

Prep Batch: VXX33149
Prep Method: SW5035A
Prep Date/Time: 09/16/18 08:40
Prep Initial Wt./Vol.: 50.658 g
Prep Extract Vol: 25 mL

J flagging is activated

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Method Blank

Blank ID: MB for HBN 1786244 [SPT/10620]
Blank Lab ID: 1476227

Matrix: Soil/Solid (dry weight)

QC for Samples:
1189757001, 1189757002, 1189757003, 1189757004, 1189757005, 1189757006, 1189757007

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT10620
Analytical Method: SM21 2540G
Instrument:
Analyst: E.M
Analytical Date/Time: 9/18/2018 8:02:00PM

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Duplicate Sample Summary

Original Sample ID: 1185324001
Duplicate Sample ID: 1476233
QC for Samples:

Analysis Date: 09/18/2018 20:02
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	95.7	96.2	%	0.49	(< 15)

Batch Information

Analytical Batch: SPT10620
Analytical Method: SM21 2540G
Instrument:
Analyst: E.M

Print Date: 09/27/2018 4:09:11PM

Duplicate Sample Summary

Original Sample ID: 1185324002
Duplicate Sample ID: 1476234

Analysis Date: 09/18/2018 20:02
Matrix: Soil/Solid (dry weight)

QC for Samples:

1189757001, 1189757002, 1189757003, 1189757004, 1189757005, 1189757006, 1189757007

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	96.4	96.2	%	0.23	(< 15)

Batch Information

Analytical Batch: SPT10620
Analytical Method: SM21 2540G
Instrument:
Analyst: E.M

Print Date: 09/27/2018 4:09:11PM

Method Blank

Blank ID: MB for HBN 1786350 [VXX/33149]
Blank Lab ID: 1476742

Matrix: Soil/Solid (dry weight)

QC for Samples:
1189757008

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.836J	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	96.8	50-150		%

Batch Information

Analytical Batch: VFC14444
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/19/2018 12:43:00PM

Prep Batch: VXX33149
Prep Method: SW5035A
Prep Date/Time: 9/19/2018 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 09/27/2018 4:09:13PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189757 [VXX33149]
Blank Spike Lab ID: 1476743
Date Analyzed: 09/19/2018 12:07

Spike Duplicate ID: LCSD for HBN 1189757 [VXX33149]
Spike Duplicate Lab ID: 1476744
Matrix: Soil/Solid (dry weight)

QC for Samples: 1189757008

Results by **AK101**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	12.5	13.6	109	12.5	12.6	101	(60-120)	7.40	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	101	101	1.25	100	100	(50-150)	1.00	

Batch Information

Analytical Batch: **VFC14444**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX33149**
Prep Method: **SW5035A**
Prep Date/Time: **09/19/2018 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

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Method Blank

Blank ID: MB for HBN 1786366 5[[VXX16/ 4
Blank 9a] ID: 1377L7/

Mairxd: QoxVQolx(y(rwg mh) iR

b 2 for QaC Slmp:
118e7s7/ / 1t 118e7s7/ / Xt 118e7s7/ / 3t 118e7s7/ / 6t 118e7s7/ / 7

umpUlip] w **AK101**

GaraC mimr	umpUlip	9Pb V2 9	D9	Onxip
c apolxnmu anhmP rhanx p	/ K78L-	LHs/	/ K7s/	ChVJ h
Surrogates				
3zBroC oflUbro] mn%mmypUrrR	eLKL	s/ z1s/		A

Batch Information

Fnalwix al Bai.) : 0T2 1333s
Fnalwix al Mmi) o(: FJ 1/ 1
InpirUC mni: Fhxlmi 78e/ GIDVTID
Fnalwpi: QW
Fnalwix al DaimVWC m eVL/ VL/ 18 s:37:/ / GM

GrmS Bai.) : 0[[XX16/
GrmS Mmi) o(: QE s/ XsF
GrmS DaimVWC m eVL/ VL/ 18 8:/ / :/ / FM
GrmS Inxixal E iK0 olK s/ h
GrmS v dira. i 0 ol: Ls C9

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189757 [VXX3314] b
Blank Spike La6 ID: 1t 77A71
Daye z nald0e/ :] 92A] 2A] 18 18:] 5

Spike Duplicaye ID: LCSD for HBN 1189757 [VXX3314] b
Spike Duplicaye La6 ID: 1t 77A7A
Mayrix: Soil2Soli/ (/ rd weighy)

QC for Samples: 1189757]] 1G1189757]] 3G1189757]] t G1189757]] 4G1189757]] 7

Resulys 6d **AK101**

	Blank Spike (mg2Kg)			Spike Duplicaye (mg2Kg)					
Parameyer	Spike	Resuly	Rec (%)	Spike	Resuly	Rec (%)	CL	RPD (%)	RPD CL
Oasoline Range . rganics	1A-5	13-1	1] 5	1A-5	13-]	1] t	(4] <1A])	1-t]	(T A])
Surrogates									
t <Bromofluoro6en0ene (surr)	1-A5	98-A	98	1-A5	1] 1	1] 1	(5] <15])	A-4]	

Batch Information

z naldyical Baych: **VFC14445**
z naldyical Meyho/ : **AK101**
Insyrumeny: **Agilent 7890 PID/FID**
z naldsy: **ST**

Prep Baych: **VXX33160**
Prep Meyho/ : **SW5035A**
Prep Daye2Vime: **09/20/2018 08:00**
Spike IniyE y-2Vol-: 1A-5 mg2Kg v xyracyVol: A5 mL
Dupe IniyE y-2Vol-: 1A-5 mg2Kg v xyracyVol: A5 mL

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Method Blank

Blank ID: MB for HBN 1786594 [VXX/33169]
Blank Lab ID: 1477559

Matrix: Soil/Solid (dry weight)

QC for Samples:
1189757001, 1189757002, 1189757003, 1189757004, 1189757006

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	0.0100U	0.0200	0.00620	mg/Kg
1,1,1-Trichloroethane	0.0125U	0.0250	0.00780	mg/Kg
1,1,2,2-Tetrachloroethane	0.00625U	0.0125	0.00390	mg/Kg
1,1,2-Trichloroethane	0.00500U	0.0100	0.00310	mg/Kg
1,1-Dichloroethane	0.0125U	0.0250	0.00780	mg/Kg
1,1-Dichloroethene	0.0125U	0.0250	0.00780	mg/Kg
1,1-Dichloropropene	0.0125U	0.0250	0.00780	mg/Kg
1,2,3-Trichlorobenzene	0.0250U	0.0500	0.0150	mg/Kg
1,2,3-Trichloropropane	0.0125U	0.0250	0.00780	mg/Kg
1,2,4-Trichlorobenzene	0.0125U	0.0250	0.00780	mg/Kg
1,2,4-Trimethylbenzene	0.0250U	0.0500	0.0150	mg/Kg
1,2-Dibromo-3-chloropropane	0.0500U	0.100	0.0310	mg/Kg
1,2-Dibromoethane	0.00500U	0.0100	0.00310	mg/Kg
1,2-Dichlorobenzene	0.0125U	0.0250	0.00780	mg/Kg
1,2-Dichloroethane	0.00500U	0.0100	0.00310	mg/Kg
1,2-Dichloropropane	0.00500U	0.0100	0.00310	mg/Kg
1,3,5-Trimethylbenzene	0.0125U	0.0250	0.00780	mg/Kg
1,3-Dichlorobenzene	0.0125U	0.0250	0.00780	mg/Kg
1,3-Dichloropropane	0.00500U	0.0100	0.00310	mg/Kg
1,4-Dichlorobenzene	0.0125U	0.0250	0.00780	mg/Kg
2,2-Dichloropropane	0.0125U	0.0250	0.00780	mg/Kg
2-Butanone (MEK)	0.125U	0.250	0.0780	mg/Kg
2-Chlorotoluene	0.0125U	0.0250	0.00780	mg/Kg
2-Hexanone	0.0500U	0.100	0.0310	mg/Kg
4-Chlorotoluene	0.0125U	0.0250	0.00780	mg/Kg
4-Isopropyltoluene	0.0500U	0.100	0.0250	mg/Kg
4-Methyl-2-pentanone (MIBK)	0.125U	0.250	0.0780	mg/Kg
Acetone	0.125U	0.250	0.0780	mg/Kg
Benzene	0.00625U	0.0125	0.00390	mg/Kg
Bromobenzene	0.0125U	0.0250	0.00780	mg/Kg
Bromochloromethane	0.0125U	0.0250	0.00780	mg/Kg
Bromodichloromethane	0.0125U	0.0250	0.00780	mg/Kg
Bromoform	0.0125U	0.0250	0.00780	mg/Kg
Bromomethane	0.100U	0.200	0.0620	mg/Kg
Carbon disulfide	0.0500U	0.100	0.0310	mg/Kg
Carbon tetrachloride	0.00625U	0.0125	0.00390	mg/Kg
Chlorobenzene	0.0125U	0.0250	0.00780	mg/Kg
Chloroethane	0.100U	0.200	0.0620	mg/Kg

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Method Blank

Blank ID: MB for HBN 1786594 [VXX/33169]
Blank Lab ID: 1477559

Matrix: Soil/Solid (dry weight)

QC for Samples:
1189757001, 1189757002, 1189757003, 1189757004, 1189757006

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Chloroform	0.0125U	0.0250	0.00780	mg/Kg
Chloromethane	0.0125U	0.0250	0.00780	mg/Kg
cis-1,2-Dichloroethene	0.0125U	0.0250	0.00780	mg/Kg
cis-1,3-Dichloropropene	0.00625U	0.0125	0.00390	mg/Kg
Dibromochloromethane	0.0125U	0.0250	0.00780	mg/Kg
Dibromomethane	0.0125U	0.0250	0.00780	mg/Kg
Dichlorodifluoromethane	0.0250U	0.0500	0.0150	mg/Kg
Ethylbenzene	0.0125U	0.0250	0.00780	mg/Kg
Freon-113	0.0500U	0.100	0.0310	mg/Kg
Hexachlorobutadiene	0.0100U	0.0200	0.00620	mg/Kg
Isopropylbenzene (Cumene)	0.0125U	0.0250	0.00780	mg/Kg
Methylene chloride	0.0500U	0.100	0.0310	mg/Kg
Methyl-t-butyl ether	0.0500U	0.100	0.0310	mg/Kg
Naphthalene	0.0125U	0.0250	0.00780	mg/Kg
n-Butylbenzene	0.0125U	0.0250	0.00780	mg/Kg
n-Propylbenzene	0.0125U	0.0250	0.00780	mg/Kg
o-Xylene	0.0125U	0.0250	0.00780	mg/Kg
P & M -Xylene	0.0250U	0.0500	0.0150	mg/Kg
sec-Butylbenzene	0.0125U	0.0250	0.00780	mg/Kg
Styrene	0.0125U	0.0250	0.00780	mg/Kg
tert-Butylbenzene	0.0125U	0.0250	0.00780	mg/Kg
Tetrachloroethene	0.00625U	0.0125	0.00390	mg/Kg
Toluene	0.0125U	0.0250	0.00780	mg/Kg
trans-1,2-Dichloroethene	0.0125U	0.0250	0.00780	mg/Kg
trans-1,3-Dichloropropene	0.00625U	0.0125	0.00390	mg/Kg
Trichloroethene	0.00500U	0.0100	0.00310	mg/Kg
Trichlorofluoromethane	0.0250U	0.0500	0.0150	mg/Kg
Vinyl acetate	0.0500U	0.100	0.0310	mg/Kg
Vinyl chloride	0.00500U	0.0100	0.00310	mg/Kg
Xylenes (total)	0.0375U	0.0750	0.0228	mg/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	106	71-136		%
4-Bromofluorobenzene (surr)	110	55-151		%
Toluene-d8 (surr)	105	85-116		%

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Method Blank

Blank ID: MB for HBN 1786594 [VXX/33169]
Blank Lab ID: 1477559

Matrix: Soil/Solid (dry weight)

QC for Samples:
1189757001, 1189757002, 1189757003, 1189757004, 1189757006

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS18342
Analytical Method: SW8260C
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 9/21/2018 7:21:00PM

Prep Batch: VXX33169
Prep Method: SW5035A
Prep Date/Time: 9/21/2018 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1189757 [VXX33169]
Blank Spike Lab ID: 1477560
Date Analyzed: 09/21/2018 19:39

Matrix: Soil/Solid (dry weight)

QC for Samples: 1189757001, 1189757002, 1189757003, 1189757004, 1189757006

Results by **SW8260C**

Blank Spike (mg/Kg)

Parameter	Spike	Result	Rec (%)	CL
1,1,1,2-Tetrachloroethane	0.750	0.773	103	(78-125)
1,1,1-Trichloroethane	0.750	0.754	101	(73-130)
1,1,2,2-Tetrachloroethane	0.750	0.774	103	(70-124)
1,1,2-Trichloroethane	0.750	0.796	106	(78-121)
1,1-Dichloroethane	0.750	0.710	95	(76-125)
1,1-Dichloroethene	0.750	0.742	99	(70-131)
1,1-Dichloropropene	0.750	0.784	104	(76-125)
1,2,3-Trichlorobenzene	0.750	0.695	93	(66-130)
1,2,3-Trichloropropane	0.750	0.817	109	(73-125)
1,2,4-Trichlorobenzene	0.750	0.720	96	(67-129)
1,2,4-Trimethylbenzene	0.750	0.789	105	(75-123)
1,2-Dibromo-3-chloropropane	0.750	0.756	101	(61-132)
1,2-Dibromoethane	0.750	0.780	104	(78-122)
1,2-Dichlorobenzene	0.750	0.781	104	(78-121)
1,2-Dichloroethane	0.750	0.780	104	(73-128)
1,2-Dichloropropane	0.750	0.775	103	(76-123)
1,3,5-Trimethylbenzene	0.750	0.802	107	(73-124)
1,3-Dichlorobenzene	0.750	0.790	105	(77-121)
1,3-Dichloropropane	0.750	0.866	115	(77-121)
1,4-Dichlorobenzene	0.750	0.780	104	(75-120)
2,2-Dichloropropane	0.750	0.709	95	(67-133)
2-Butanone (MEK)	2.25	2.24	100	(51-148)
2-Chlorotoluene	0.750	0.807	108	(75-122)
2-Hexanone	2.25	2.36	105	(53-145)
4-Chlorotoluene	0.750	0.802	107	(72-124)
4-Isopropyltoluene	0.750	0.792	106	(73-127)
4-Methyl-2-pentanone (MIBK)	2.25	2.19	97	(65-135)
Acetone	2.25	2.50	111	(36-164)
Benzene	0.750	0.774	103	(77-121)
Bromobenzene	0.750	0.793	106	(78-121)
Bromochloromethane	0.750	0.708	94	(78-125)
Bromodichloromethane	0.750	0.769	102	(75-127)
Bromoform	0.750	0.755	101	(67-132)
Bromomethane	0.750	0.776	103	(53-143)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1189757 [VXX33169]
Blank Spike Lab ID: 1477560
Date Analyzed: 09/21/2018 19:39

Matrix: Soil/Solid (dry weight)

QC for Samples: 1189757001, 1189757002, 1189757003, 1189757004, 1189757006

Results by **SW8260C**

Blank Spike (mg/Kg)

Parameter	Spike	Result	Rec (%)	CL
Carbon disulfide	1.13	1.12	99	(63-132)
Carbon tetrachloride	0.750	0.780	104	(70-135)
Chlorobenzene	0.750	0.782	104	(79-120)
Chloroethane	0.750	0.810	108	(59-139)
Chloroform	0.750	0.778	104	(78-123)
Chloromethane	0.750	0.736	98	(50-136)
cis-1,2-Dichloroethene	0.750	0.713	95	(77-123)
cis-1,3-Dichloropropene	0.750	0.815	109	(74-126)
Dibromochloromethane	0.750	0.791	105	(74-126)
Dibromomethane	0.750	0.745	99	(78-125)
Dichlorodifluoromethane	0.750	0.708	94	(29-149)
Ethylbenzene	0.750	0.796	106	(76-122)
Freon-113	1.13	1.14	101	(66-136)
Hexachlorobutadiene	0.750	0.706	94	(61-135)
Isopropylbenzene (Cumene)	0.750	0.819	109	(68-134)
Methylene chloride	0.750	0.782	104	(70-128)
Methyl-t-butyl ether	1.13	1.17	104	(73-125)
Naphthalene	0.750	0.723	96	(62-129)
n-Butylbenzene	0.750	0.786	105	(70-128)
n-Propylbenzene	0.750	0.838	112	(73-125)
o-Xylene	0.750	0.803	107	(77-123)
P & M -Xylene	1.50	1.62	108	(77-124)
sec-Butylbenzene	0.750	0.814	109	(73-126)
Styrene	0.750	0.819	109	(76-124)
tert-Butylbenzene	0.750	0.808	108	(73-125)
Tetrachloroethene	0.750	0.820	109	(73-128)
Toluene	0.750	0.777	104	(77-121)
trans-1,2-Dichloroethene	0.750	0.730	97	(74-125)
trans-1,3-Dichloropropene	0.750	0.764	102	(71-130)
Trichloroethene	0.750	0.788	105	(77-123)
Trichlorofluoromethane	0.750	0.871	116	(62-140)
Vinyl acetate	0.750	0.758	101	(50-151)
Vinyl chloride	0.750	0.739	99	(56-135)
Xylenes (total)	2.25	2.43	108	(78-124)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1189757 [VXX33169]
Blank Spike Lab ID: 1477560
Date Analyzed: 09/21/2018 19:39

Matrix: Soil/Solid (dry weight)

QC for Samples: 1189757001, 1189757002, 1189757003, 1189757004, 1189757006

Results by **SW8260C**

Blank Spike (mg/Kg)

Parameter	Spike	Result	Rec (%)	CL
Surrogates				
1,2-Dichloroethane-D4 (surr)	0.750	93.3	93	(71-136)
4-Bromofluorobenzene (surr)	0.750	109	109	(55-151)
Toluene-d8 (surr)	0.750	101	101	(85-116)

Batch Information

Analytical Batch: **VMS18342**
Analytical Method: **SW8260C**
Instrument: **VSA Agilent GC/MS 7890B/5977A**
Analyst: **NRO**

Prep Batch: **VXX33169**
Prep Method: **SW5035A**
Prep Date/Time: **09/21/2018 06:00**
Spike Init Wt./Vol.: 0.750 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1185289007
MS Sample ID: 1477561 MS
MSD Sample ID: 1477562 MSD

Analysis Date: 09/21/2018 21:40
Analysis Date: 09/21/2018 20:14
Analysis Date: 09/21/2018 20:31
Matrix: Soil/Solid (dry weight)

QC for Samples: 1189757001, 1189757002, 1189757003, 1189757004, 1189757006

Results by **SW8260C**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	0.0118U	0.313	0.315	101	0.313	0.337	107	78-125	6.50	(< 20)
1,1,1-Trichloroethane	0.0147U	0.313	0.356	114	0.313	0.339	108	73-130	4.90	(< 20)
1,1,2,2-Tetrachloroethane	0.00736U	0.313	0.315	101	0.313	0.325	104	70-124	2.90	(< 20)
1,1,2-Trichloroethane	0.00589U	0.313	0.325	104	0.313	0.340	109	78-121	4.80	(< 20)
1,1-Dichloroethane	0.0147U	0.313	0.332	106	0.313	0.315	101	76-125	5.20	(< 20)
1,1-Dichloroethene	0.0147U	0.313	0.360	115	0.313	0.340	108	70-131	5.90	(< 20)
1,1-Dichloropropene	0.0147U	0.313	0.370	118	0.313	0.355	113	76-125	4.30	(< 20)
1,2,3-Trichlorobenzene	0.0295U	0.313	0.301	96	0.313	0.308	99	66-130	2.40	(< 20)
1,2,3-Trichloropropane	0.0147U	0.313	0.336	107	0.313	0.342	109	73-125	1.90	(< 20)
1,2,4-Trichlorobenzene	0.0147U	0.313	0.309	99	0.313	0.313	100	67-129	1.10	(< 20)
1,2,4-Trimethylbenzene	0.0295U	0.313	0.343	109	0.313	0.337	108	75-123	1.70	(< 20)
1,2-Dibromo-3-chloropropane	0.0589U	0.313	0.324	103	0.313	0.324	103	61-132	0.14	(< 20)
1,2-Dibromoethane	0.00589U	0.313	0.316	101	0.313	0.333	106	78-122	5.30	(< 20)
1,2-Dichlorobenzene	0.0147U	0.313	0.325	104	0.313	0.328	105	78-121	0.80	(< 20)
1,2-Dichloroethane	0.00589U	0.313	0.345	110	0.313	0.332	106	73-128	3.90	(< 20)
1,2-Dichloropropane	0.00589U	0.313	0.341	109	0.313	0.332	106	76-123	2.50	(< 20)
1,3,5-Trimethylbenzene	0.0147U	0.313	0.343	110	0.313	0.339	108	73-124	1.40	(< 20)
1,3-Dichlorobenzene	0.0147U	0.313	0.329	105	0.313	0.330	106	77-121	0.47	(< 20)
1,3-Dichloropropane	0.00589U	0.313	0.356	114	0.313	0.369	118	77-121	3.50	(< 20)
1,4-Dichlorobenzene	0.0147U	0.313	0.328	105	0.313	0.330	105	75-120	0.71	(< 20)
2,2-Dichloropropane	0.0147U	0.313	0.347	111	0.313	0.327	105	67-133	6.10	(< 20)
2-Butanone (MEK)	0.147U	0.939	0.936	100	0.939	0.940	100	51-148	0.45	(< 20)
2-Chlorotoluene	0.0147U	0.313	0.341	109	0.313	0.343	109	75-122	0.66	(< 20)
2-Hexanone	0.0589U	0.939	0.916	98	0.939	0.975	104	53-145	6.20	(< 20)
4-Chlorotoluene	0.0147U	0.313	0.340	109	0.313	0.338	108	72-124	0.75	(< 20)
4-Isopropyltoluene	0.0589U	0.313	0.339	108	0.313	0.336	107	73-127	1.20	(< 20)
4-Methyl-2-pentanone (MIBK)	0.147U	0.939	0.869	92	0.939	0.902	96	65-135	3.80	(< 20)
Acetone	0.147U	0.939	1.08	115	0.939	1.07	114	36-164	0.69	(< 20)
Benzene	0.00736U	0.313	0.344	110	0.313	0.339	108	77-121	1.50	(< 20)
Bromobenzene	0.0147U	0.313	0.345	110	0.313	0.340	108	78-121	1.80	(< 20)
Bromochloromethane	0.0147U	0.313	0.321	103	0.313	0.309	99	78-125	3.90	(< 20)
Bromodichloromethane	0.0147U	0.313	0.340	109	0.313	0.328	105	75-127	3.60	(< 20)
Bromoform	0.0147U	0.313	0.305	97	0.313	0.327	104	67-132	7.00	(< 20)
Bromomethane	0.118U	0.313	0.382	122	0.313	0.357	114	53-143	6.90	(< 20)
Carbon disulfide	0.0589U	0.470	0.559	119	0.470	0.518	110	63-132	7.70	(< 20)
Carbon tetrachloride	0.00736U	0.313	0.376	120	0.313	0.356	114	70-135	5.30	(< 20)
Chlorobenzene	0.0147U	0.313	0.333	106	0.313	0.340	109	79-120	2.10	(< 20)

Print Date: 09/27/2018 4:09:22PM

Matrix Spike Summary

Original Sample ID: 1185289007
MS Sample ID: 1477561 MS
MSD Sample ID: 1477562 MSD

Analysis Date: 09/21/2018 21:40
Analysis Date: 09/21/2018 20:14
Analysis Date: 09/21/2018 20:31
Matrix: Soil/Solid (dry weight)

QC for Samples: 1189757001, 1189757002, 1189757003, 1189757004, 1189757006

Results by **SW8260C**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Chloroethane	0.118U	0.313	0.410	131	0.313	0.372	119	59-139	9.70	(< 20)
Chloroform	0.0147U	0.313	0.356	114	0.313	0.339	108	78-123	4.90	(< 20)
Chloromethane	0.0147U	0.313	0.369	118	0.313	0.340	108	50-136	8.50	(< 20)
cis-1,2-Dichloroethene	0.0147U	0.313	0.336	107	0.313	0.311	99	77-123	7.50	(< 20)
cis-1,3-Dichloropropene	0.00736U	0.313	0.355	113	0.313	0.349	111	74-126	1.60	(< 20)
Dibromochloromethane	0.0147U	0.313	0.327	104	0.313	0.341	109	74-126	4.40	(< 20)
Dibromomethane	0.0147U	0.313	0.327	104	0.313	0.316	101	78-125	3.50	(< 20)
Dichlorodifluoromethane	0.0295U	0.313	0.356	114	0.313	0.322	103	29-149	9.70	(< 20)
Ethylbenzene	0.0147U	0.313	0.341	109	0.313	0.342	109	76-122	0.43	(< 20)
Freon-113	0.0589U	0.470	0.544	116	0.470	0.518	110	66-136	5.00	(< 20)
Hexachlorobutadiene	0.0118U	0.313	0.454	145 *	0.313	0.408	130	61-135	10.70	(< 20)
Isopropylbenzene (Cumene)	0.0147U	0.313	0.342	109	0.313	0.349	111	68-134	1.90	(< 20)
Methylene chloride	0.0589U	0.313	0.367	117	0.313	0.350	112	70-128	4.70	(< 20)
Methyl-t-butyl ether	0.0589U	0.470	0.473	101	0.470	0.494	105	73-125	4.30	(< 20)
Naphthalene	0.0147U	0.313	0.295	94	0.313	0.313	100	62-129	5.70	(< 20)
n-Butylbenzene	0.0147U	0.313	0.357	114	0.313	0.342	109	70-128	4.30	(< 20)
n-Propylbenzene	0.0147U	0.313	0.353	113	0.313	0.357	114	73-125	1.20	(< 20)
o-Xylene	0.0147U	0.313	0.337	108	0.313	0.345	110	77-123	2.50	(< 20)
P & M -Xylene	0.0295U	0.626	0.681	109	0.626	0.693	111	77-124	1.60	(< 20)
sec-Butylbenzene	0.0147U	0.313	0.346	111	0.313	0.345	110	73-126	0.30	(< 20)
Styrene	0.0147U	0.313	0.349	111	0.313	0.350	111	76-124	0.17	(< 20)
tert-Butylbenzene	0.0147U	0.313	0.344	110	0.313	0.347	111	73-125	0.84	(< 20)
Tetrachloroethene	0.00736U	0.313	0.342	109	0.313	0.367	117	73-128	7.20	(< 20)
Toluene	0.0147U	0.313	0.332	106	0.313	0.340	108	77-121	2.10	(< 20)
trans-1,2-Dichloroethene	0.0147U	0.313	0.337	107	0.313	0.330	105	74-125	2.00	(< 20)
trans-1,3-Dichloropropene	0.00736U	0.313	0.318	102	0.313	0.334	107	71-130	4.90	(< 20)
Trichloroethene	0.00589U	0.313	0.359	115	0.313	0.350	112	77-123	2.50	(< 20)
Trichlorofluoromethane	0.0295U	0.313	0.610	195 *	0.313	0.502	160 *	62-140	19.50	(< 20)
Vinyl acetate	0.0589U	0.313	0.329	105	0.313	0.327	104	50-151	0.91	(< 20)
Vinyl chloride	0.00589U	0.313	0.379	121	0.313	0.340	109	56-135	10.80	(< 20)
Xylenes (total)	0.0442U	0.939	1.02	108	0.939	1.04	110	78-124	1.90	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		0.313	0.300	96	0.313	0.287	92	71-136	4.60	
4-Bromofluorobenzene (surr)		0.522	0.295	57	0.522	0.288	55	55-151	2.80	
Toluene-d8 (surr)		0.313	0.314	100	0.313	0.320	102	85-116	2.00	

Print Date: 09/27/2018 4:09:22PM

Matrix Spike Summary

Original Sample ID: 1185289007
MS Sample ID: 1477561 MS
MSD Sample ID: 1477562 MSD

Analysis Date:
Analysis Date: 09/21/2018 20:14
Analysis Date: 09/21/2018 20:31
Matrix: Soil/Solid (dry weight)

QC for Samples: 1189757001, 1189757002, 1189757003, 1189757004, 1189757006

Results by **SW8260C**

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

Batch Information

Analytical Batch: VMS18342
Analytical Method: SW8260C
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 9/21/2018 8:14:00PM

Prep Batch: VXX33169
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 9/21/2018 6:00:00AM
Prep Initial Wt./Vol.: 130.02g
Prep Extract Vol: 25.00mL

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Method Blank

Blank ID: MB for HBN 1786607 [VXX/33175]
Blank Lab ID: 1477630

Matrix: Soil/Solid (dry weight)

QC for Samples:
1189757005

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	83.4	50-150		%

Batch Information

Analytical Batch: VFC14450
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/21/2018 1:10:00PM

Prep Batch: VXX33175
Prep Method: SW5035A
Prep Date/Time: 9/21/2018 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1189757 [VXX331754
Blank Spike La] ID: 1b77631
Date Analyzed: 09/21/2018 11:58

Spike Duplicate ID: LCSD for HBN 1189757 [VXX331754
Spike Duplicate La] ID: 1b77632
Matrix: Soil/Solid (dry weight)

QC for Samples: 1189757005

Results] y **AK101**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	12.5	11.5	92	12.5	11.9	95	(60-120)	3.50	(< 20)
Surrogates									
b-Bromofluoro] enzene (surr)	1.25	92.3	92	1.25	9b.b	9b	(50-150)	2.20	

Batch Information

Analytical Batch: **VFC14470**
Analytical Method: **AK101**
Instrument: **Agilent 89P0A DI/ TFI/**
Analyst: **SX**

Prep Batch: **V33WW187**
Prep Method: **S5 70W7A**
Prep Date/Time: **0PT21T2019 09:00**
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

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Method Blank

Blank ID: MB for HBN 1786700 [VXX/33188]
Blank Lab ID: 1478066

Matrix: Soil/Solid (dry weight)

QC for Samples:
1189757005

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.00625U	0.0125	0.00390	mg/Kg
Ethylbenzene	0.0125U	0.0250	0.00780	mg/Kg
o-Xylene	0.0125U	0.0250	0.00780	mg/Kg
P & M -Xylene	0.0250U	0.0500	0.0150	mg/Kg
Toluene	0.0125U	0.0250	0.00780	mg/Kg
Xylenes (total)	0.0375U	0.0750	0.0228	mg/Kg
Sf uor ateg				
1,2-Dichloroethane-D4 (surr)	109	71-136		%
4-Bromofluorobenzene (surr)	108	55-151		%
Toluene-d8 (surr)	98.4	85-116		%

Batsh ɑloumation

Analytical Batch: VMS18358
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 9/24/2018 7:52:00PM

Prep Batch: VXX33188
Prep Method: SW5035A
Prep Date/Time: 9/24/2018 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 09/27/2018 4:09:25PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189757 [VXX33188]
Blank Spike Lab ID: 1478067
Date Analyzed: 09/24/2018 20:08

Matrix: Soil/Solid (dry weight)

QC for Samples: 1189757005

Results by **SW8260C**

Blank Spike (mg/Kg)

Parameter	Spike	Result	Rec (%)	CL
Benzene	0.750	0.755	101	(77-121)
Ethylbenzene	0.750	0.758	101	(76-122)
o-Xylene	0.750	0.746	100	(77-123)
P & M -Xylene	1.50	1.49	99	(77-124)
Toluene	0.750	0.719	96	(77-121)
Xylenes (total)	2.25	2.23	99	(78-124)
Surrogates				
1,2-Dichloroethane-D4 (surr)	0.750	94.9	95	(71-136)
4-Bromofluorobenzene (surr)	0.750	111	111	(55-151)
Toluene-d8 (surr)	0.750	102	102	(85-116)

Batch Information

Analytical Batch: **VMS18358**
Analytical Method: **SW8260C**
Instrument: **VQA 7890/5975 GC/MS**
Analyst: **NRO**

Prep Batch: **VXX33188**
Prep Method: **SW5035A**
Prep Date/Time: **09/24/2018 06:00**
Spike Init Wt./Vol.: 0.750 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/27/2018 4:09:27PM

Matrix Spike Summary

Original Sample ID: 1185408005
MS Sample ID: 1478068 MS
MSD Sample ID: 1478069 MSD

QC for Samples: 1189757005

Analysis Date: 09/24/2018 21:47
Analysis Date: 09/24/2018 20:25
Analysis Date: 09/24/2018 20:41
Matrix: Soil/Solid (dry weight)

Results by **SW8260C**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	0.0108U	1.30	1.19	92	1.30	1.17	91	77-121	1.70	(< 20)
Ethylbenzene	0.0216U	1.30	1.19	92	1.30	1.15	89	76-122	2.80	(< 20)
o-Xylene	0.0216U	1.30	1.18	91	1.30	1.13	87	77-123	4.70	(< 20)
P & M -Xylene	0.0432U	2.60	2.35	91	2.60	2.25	87	77-124	4.50	(< 20)
Toluene	0.0216U	1.30	1.11	85	1.30	1.09	84	77-121	1.20	(< 20)
Xylenes (total)	0.0650U	3.89	3.54	91	3.89	3.37	87	78-124	4.60	(< 20)
Surrf oateg										
1,2-Dichloroethane-D4 (surr)		1.30	1.24	96	1.30	1.24	96	71-136	0.00	
4-Bromofluorobenzene (surr)		1.57	1.46	93	1.57	1.45	92	55-151	0.49	
Toluene-d8 (surr)		1.30	1.32	102	1.30	1.31	101	85-116	0.24	

s atBc Hl rf rmatif l

Analytical Batch: VMS18358
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 9/24/2018 8:25:00PM

Prep Batch: VXX33188
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 9/24/2018 6:00:00AM
Prep Initial Wt./Vol.: 49.12g
Prep Extract Vol: 34.39mL

Print Date: 09/27/2018 4:09:28PM

Method Blank

Blank ID: MB for HBN 1786707 [VXX/33] L3b
Blank 4aQID: 1C78CS6

Mairxd: eoxl/eolx(y(rwg 5xh) iR

mp for eas 9l5t :
11807S7LL7

u 5t Ulit QwSW8260C

zaras 5i5r	u 5t Ulit	4P m/p 4	D4	Onxit
B5n. 5n5	L2L6] SO	L2L1] S	L2L30L	s h/Kh
Ei) wlQ5n. 5n5	L2L1] SO	L2L] SL	L2L78L	s h/Kh
o-Xwl5n5	L2L1] SO	L2L] SL	L2L78L	s h/Kh
z & M -Xwl5n5	L2L] SLO	L2LSLL	L2L1SL	s h/Kh
TolU5n5	L2L1] SO	L2L] SL	L2L78L	s h/Kh
Xwl5n5t yioialR	L2L37SO	L2L7SL	L2L]] 8	s h/Kh
Sf uor ateg				
1,] -Dxc) loro5i) an5-DC yt UrrR	0723	71-136		%
C-Bros oflUbroQ5n. 5n5 yt UrrR	1LC	SS-1S1		%
TolU5n5-(8 yt UrrR	0023	8S-116		%

Batsh cnloumation

Analwixcal Baic) : VMe 18368
Analwixcal M5i) o(: eW8] 6Lp
Int irUs 5ni: Vu A Ahxl5ni Gp/Me 780LB/S077A
Analwt i: Nu P
Analwixcal Dai5/Txs 5: 0/] S/] L18 11:L7:LLAM

zr59 Baic) : VXX33] L3
zr59 M5i) o(: eWSL3SA
zr59 Dai5/Txs 5: 0/] S/] L18 6:LL:LLAM
zr59 Inxixal Wi2Vol2 SL h
zr59 Ediraci Vol:] S s 4

zrxni Dai5: L0/] 7/] L18 C:L0:] 0z M

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189757 [VXX33] b34
Blank Spike La0 ID: 1678657
Date Analyzed: b9/] 5/] b18 1] :] b

u atriM Soil/Solid xdry (eiwgth

KC for SaP pleR 1189757bb7

2 eRsltR0y **SW8260C**

Blank Spike xP w%wh

) araP eter	Spike	2 eRslt	2 emxc h	CL
Benzene	bQ75b	bQ8-	9]	x77.1] 1 h
Etgyl0enzene	bQ75b	bQ- 6	89	x7- .1]] h
o.Xylene	bQ75b	bQ69	87	x77.1] 3 h
) & u .Xylene	1Q5b	1Q09	8-	x77.1] 6 h
Tolsene	bQ75b	bQ33	86	x77.1] 1 h
XyleneRxtotalh	] Q05	1Q96	8-	x78.1] 6 h
Surrogates				
1,] .Dingloroetgane.D6 xRsrrh	bQ75b	91Q	9]	x71.13- h
6.BroP ofIsoro0enzene xRsrrh	bQ75b	1b]	1b]	x55.151 h
Tolsene.d8 xRsrrh	bQ75b	99Q3	99	x85.11- h

Batch Information

Analytinal Batng: **VMS18368**
Analytinal u etgod: **SW8260C**
InRtrsP ent: **VRA Agilent GC/MS 7890B/5977A**
AnalyRt: **NRO**

) rep Batng: **VXX33203**
) rep u etgod: **SW5035A**
) rep Date/TiP e: **09/25/2018 06:00**
Spike Init WtQVolQ bQ75b P w%w EMramt Vol:] 5 P L
Dspe Init WtQVolQ EMramt Vol:

) rint Date: b9/] 7/] b18 6:b9:3b) u

Matrix Spike Summary

Original Sample ID: 1854850
MS Sample ID: 1854874 MS
MSD Sample ID: 1854876 MSD

c Q Qr Sampley: 1146575005

9nalAyiy Dase: 06t/ 7t/ 014 15:1/
9nalAyiy Dase: 06t/ 7t/ 014 18:78
9nalAyiy Dase: 06t/ 7t/ 014 17:06
Masri2: SxiltSxlio dbrA (eigwsh

) eyRlsy uA SW8260C

		Masri2 Spibe dmgtk gh				Spibe DRpliKase dmgtk gh						
f arameser	Sample	Spibe	) eyRls	) eKdP h		Spibe	) eyRls	) eKdP h		Q%	) f D dP h	) f D Q%
LenBene	0z08. 63	7z 8	7z05	60		7z 8	7z/ 4	68		55U1/ 1	8z/ 0	d- / 0 h
<swAluenBene	1z60	7z 8	. z78	4/		7z 8	. z6/	46		5. U1/ /	7z 0	d- / 0 h
xUEAlene	7z17	7z 8	6zX/	58	*	7z 8	6z67	47		55U1/ X	. z70	d- / 0 h
f & M UEAlene	1. z0	11zX	/ / z5	76	*	11zX	/ 8z/	5X	*	55U1/ 8	. z 0	d- / 0 h
TxlRene	0z06X73	7z 8	8z5/	48		7z 8	8z68	44		55U1/ 1	8z50	d- / 0 h
EAleney dsxsalh	/ 1z1	1. z6	X/ z0	. 8	*	1. z6	X8z/	55	*	54U1/ 8	. z70	d- / 0 h
Surrf oateg												
1,/ UDiKwlxrxeswaneUD8 dyRrrh		7z 8	7z/ 1	6/		7z 8	7zX1	68		51U1X.	1z40	
8UL rxmxQRxrxuenBene dyRrrh		1z1X	1z04	6.		1z1X	1z06	6.		77U171	0z55	
TxlReneUb4 dyRrrh		7z 8	7z74	66		7z 8	7z /	100		47U1 1.	0z 6	

s atBc Hl rf rmatif l

9nalAsiKal LasKw: VMS14X. 4
9nalAsiKal Meswxo: SW4/ . 0Q
InysrRmens: V) 9 9gilensGQtMS 5460Lt76559
9nalAys: N) O
9nalAsiKal DasetTime: 6t/ 7t/ 014 / :78:00f M

f rep LasKw: VEEXX/ 0X
f rep Meswxo: Vxlz<2sraKsixn SW4/ . 0 Fielo <2sraKseo %
f rep DasetTime: 6t/ 7t/ 014 . :00:009M
f rep Inisial WstVxlz 77zX6g
f rep <2sraKsVxl: 81z7/ m%

f rinsDase: 06t/ 5t/ 014 8:06:X/ f M

Method Blank

Blank ID: MB for HBN 1785978 [XXX/40469]
Blank Lab ID: 1475021

Matrix: Soil/Solid (dry weight)

QC for Samples:
1189757002

Results by **8270D SIM (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0125U	0.0250	0.00625	mg/Kg
2-Methylnaphthalene	0.0125U	0.0250	0.00625	mg/Kg
Acenaphthene	0.0125U	0.0250	0.00625	mg/Kg
Acenaphthylene	0.0125U	0.0250	0.00625	mg/Kg
Anthracene	0.0125U	0.0250	0.00625	mg/Kg
Benzo(a)Anthracene	0.0125U	0.0250	0.00625	mg/Kg
Benzo[a]pyrene	0.0125U	0.0250	0.00625	mg/Kg
Benzo[b]Fluoranthene	0.0125U	0.0250	0.00625	mg/Kg
Benzo[g,h,i]perylene	0.0125U	0.0250	0.00625	mg/Kg
Benzo[k]fluoranthene	0.0125U	0.0250	0.00625	mg/Kg
Chrysene	0.0125U	0.0250	0.00625	mg/Kg
Dibenzo[a,h]anthracene	0.0125U	0.0250	0.00625	mg/Kg
Fluoranthene	0.0125U	0.0250	0.00625	mg/Kg
Fluorene	0.0125U	0.0250	0.00625	mg/Kg
Indeno[1,2,3-c,d] pyrene	0.0125U	0.0250	0.00625	mg/Kg
Naphthalene	0.0100U	0.0200	0.00500	mg/Kg
Phenanthrene	0.0125U	0.0250	0.00625	mg/Kg
Pyrene	0.0125U	0.0250	0.00625	mg/Kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	77.6	58-103		%
Fluoranthene-d10 (surr)	77.4	54-113		%

Batch Information

Analytical Batch: XMS11088
Analytical Method: 8270D SIM (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: BMZ
Analytical Date/Time: 9/20/2018 3:16:00PM

Prep Batch: XXX40469
Prep Method: SW3550C
Prep Date/Time: 9/19/2018 8:34:32AM
Prep Initial Wt./Vol.: 22.5 g
Prep Extract Vol: 5 mL

Print Date: 09/27/2018 4:09:33PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189757 [XXX40469]
Blank Spike Lab ID: 1475022
Date Analyzed: 09/20/2018 15:36

Matrix: Soil/Solid (dry weight)

QC for Samples: 1189757002

Results by **8270D SIM (PAH)**

Blank Spike (mg/Kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	0.111	0.0830	75	(43-111)
2-Methylnaphthalene	0.111	0.0796	72	(39-114)
Acenaphthene	0.111	0.0943	85	(44-111)
Acenaphthylene	0.111	0.0866	78	(39-116)
Anthracene	0.111	0.0962	87	(50-114)
Benzo(a)Anthracene	0.111	0.0866	78	(54-122)
Benzo[a]pyrene	0.111	0.0880	79	(50-125)
Benzo[b]Fluoranthene	0.111	0.0926	83	(53-128)
Benzo[g,h,i]perylene	0.111	0.0947	85	(49-127)
Benzo[k]fluoranthene	0.111	0.0985	89	(56-123)
Chrysene	0.111	0.0931	84	(57-118)
Dibenzo[a,h]anthracene	0.111	0.0975	88	(50-129)
Fluoranthene	0.111	0.0858	77	(55-119)
Fluorene	0.111	0.0894	81	(47-114)
Indeno[1,2,3-c,d] pyrene	0.111	0.0954	86	(49-130)
Naphthalene	0.111	0.0782	70	(38-111)
Phenanthrene	0.111	0.0918	83	(49-113)
Pyrene	0.111	0.0893	80	(55-117)
Surrogates				
2-Methylnaphthalene-d10 (surr)	0.111	79.5	80	(58-103)
Fluoranthene-d10 (surr)	0.111	78.9	79	(54-113)

Batch Information

Analytical Batch: **XMS11088**
Analytical Method: **8270D SIM (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **BMZ**

Prep Batch: **XXX40469**
Prep Method: **SW3550C**
Prep Date/Time: **09/19/2018 08:34**
Spike Init Wt./Vol.: 0.111 mg/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/27/2018 4:09:35PM

Matrix Spike Summary

Original Sample ID: 1185180003
MS Sample ID: 1476238 MS
MSD Sample ID: 1476239 MSD

QC for Samples: 1189757002

Analysis Date: 09/20/2018 15:57
Analysis Date: 09/20/2018 16:17
Analysis Date: 09/20/2018 16:38
Matrix: Soil/Solid (dry weight)

Results by **8270D SIM (PAH)**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	0.590U	1.04	0.747J	72	0.987	0.719J	73	43-111	3.60	(< 20)
2-Methylnaphthalene	0.590U	1.04	0.694J	67	0.987	0.688J	70	39-114	0.84	(< 20)
Acenaphthene	0.590U	1.04	0.863J	83	0.987	0.842J	85	44-111	2.70	(< 20)
Acenaphthylene	0.590U	1.04	0.842J	81	0.987	0.888J	90	39-116	5.50	(< 20)
Anthracene	0.590U	1.04	0.816J	79	0.987	0.814J	83	50-114	0.28	(< 20)
Benzo(a)Anthracene	0.590U	1.04	0.759J	73	0.987	0.753J	76	54-122	0.88	(< 20)
Benzo[a]pyrene	0.590U	1.04	0.800J	77	0.987	0.781J	79	50-125	2.30	(< 20)
Benzo[b]Fluoranthene	0.590U	1.04	0.833J	80	0.987	0.821J	83	53-128	1.40	(< 20)
Benzo[g,h,i]perylene	0.590U	1.04	0.823J	79	0.987	0.806J	82	49-127	2.10	(< 20)
Benzo[k]fluoranthene	0.590U	1.04	0.861J	83	0.987	0.863J	88	56-123	0.24	(< 20)
Chrysene	0.590U	1.04	0.814J	78	0.987	0.808J	82	57-118	0.56	(< 20)
Dibenzo[a,h]anthracene	0.590U	1.04	0.871J	84	0.987	0.871J	88	50-129	0.02	(< 20)
Fluoranthene	0.590U	1.04	0.709J	68	0.987	0.696J	71	55-119	2.00	(< 20)
Fluorene	0.590U	1.04	0.835J	81	0.987	0.842J	85	47-114	0.67	(< 20)
Indeno[1,2,3-c,d] pyrene	0.590U	1.04	0.871J	84	0.987	0.854J	87	49-130	1.80	(< 20)
Naphthalene	0.473U	1.04	0.669J	65	0.987	0.652J	66	38-111	2.60	(< 20)
Phenanthrene	0.590U	1.04	0.797J	77	0.987	0.802J	81	49-113	0.48	(< 20)
Pyrene	0.590U	1.04	0.743J	72	0.987	0.728J	74	55-117	1.90	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.04	0.827	80	0.987	0.802	81	58-103	3.20	
Fluoranthene-d10 (surr)		1.04	0.747	72	0.987	0.736	75	54-113	1.50	

Batch Information

Analytical Batch: XMS11088
Analytical Method: 8270D SIM (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: BMZ
Analytical Date/Time: 9/20/2018 4:17:00PM

Prep Batch: XXX40469
Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
Prep Date/Time: 9/19/2018 8:34:32AM
Prep Initial Wt./Vol.: 5.08g
Prep Extract Vol: 5.00mL

Print Date: 09/27/2018 4:09:35PM

Method Blank

Blank ID: MB for HBN 1786240 [XXX/40510]
Blank Lab ID: 1476215

Matrix: Soil/Solid (dry weight)

QC for Samples:
1189757001, 1189757002, 1189757003, 1189757004, 1189757005, 1189757006, 1189757007

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	82.6	60-120		%

Batch Information

Analytical Batch: XFC14618
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: CMS
Analytical Date/Time: 9/19/2018 1:41:00PM

Prep Batch: XXX40510
Prep Method: SW3550C
Prep Date/Time: 9/18/2018 8:32:12PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189757 [VVVX35134
Blank Spike La] ID: 1X7b61b
Date Analyzed: 3901906318 1/ :53

Spike D2pliuate ID: LCSD for HBN 1189757 [VVVX35134
Spike D2pliuate La] ID: 1X7b617
s atriM Soil0Solid xdry (eiwgth

KC for SaP pleR 1189757331Q1189757336Q118975733/ Q118975733XQ1189757335Q118975733bQ1189757337

c eR2ltR] y **AK102**

	Blank Spike xP w0%wh			Spike D2pliuate xP w0%wh					
) araP eter	Spike	c eR2lt	c eu xmh	Spike	c eR2lt	c eu xmh	CL	c) D xmh	c) D CL
DieRel c anwe GrwaniuR	8/ /	8b9	13X	8/ /	877	135	x75C165 h	3-95	x 63 h
Surrogates									
5a AndroRtane xR2rrh	1b-7	135	135	1b-7	13b	13b	xb3C163 h	1-33	

Batch Information

Analytiual Batug: **XFC14618**
Analytiual s etgod: **AK102**
InRtr2P ent: **Agilent 7890B R**
AnalyRt: **CMS**

) rep Batug: **XXX40510**
) rep s etgod: **SW3550C**
) rep Date0<iP e: **09/18/2018 20:32**
Spike Init T t-0Wol-: 8/ / P w0%w EMraut Wol: 5 P L
D2pe Init T t-0Wol-: 8/ / P w0%w EMraut Wol: 5 P L

REVIEWED S.D

1189757

SHANNON & WILSON, INC. — CHAIN-OF-CUSTODY RECORD

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

Page 1 of 1

Laboratory SGS

Attn:

Turn Around Time: ☑ Normal ☐ Rush — Please Specify

Quote No:

J-Flags: ☑ Yes ☐ No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	DRO (AK101)	PAH (8270 SIM)	BTEX/GRO [MeOH] (8260)	VOCs [MeOH] (SW8260C)				Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
SB18-01-01	(1) A-B	840	9/16/18	X		X					2	Soil
SB18-01-02	(2) A-B	845		X	X		X				2	
SB18-101-02	(3) A-B	855		X		X					2	
SB18-02-01	(4) A-B	955		X		X					2	
SB18-02-02	(5) A-B	1005		X		X					2	
SB18-03-01	(6) A-B	1055		X		X					2	
SB18-03-02	(7) A-B	11:00		X		X					2	
Trip Blank	(8) A					X	X				1	Lab Provided

Project Information	
Number:	101607
Name:	1066 ELIZ
Contact:	SMH
Ongoing Project?	Yes ☑ No ☐
Sampler:	CAB, JS

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	3.5
Delivery Method:	

Notes:

#Trip blank kept w/ samples throughout project

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 12:47	Signature: Time: 1500	Signature: Time:
Printed Name: Kevin Chaney Date: 9/17/18	Printed Name: Date: 9-17-18	Printed Name: Date:
Company: Stw	Company: SGS	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1247	Signature: Time:	Signature: Time: 0945
Printed Name: Jen Dawkins Date: 9-17-18	Printed Name: Date:	Printed Name: Amanda Tabor Date: 9/18/18
Company: SGS	Company:	Company: SGS

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

ANC: 1.2036
1-F.1-B

No. 35640

SGS

1189757

FAIRBANKS SAMPLE RECEIPT FORM

Note: This form is to be completed by Fairbanks Receiving Staff for all samples

Review Criteria:	Condition:	Comments/Actions Taken
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No ~~N/A~~ Yes No N/A	□*Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C) *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ 3.5 w/Therm. ID: D40 Cooler ID: ____ @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank and "**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 ( ). Please check one.	Yes No Yes No ~~N/A~~ Yes No ~~N/A~~	□*Exemption permitted if chilled & collected <8hrs ago* ***Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.***
Delivery Method: ~~Client~~ (hand carried) Other: ____	Tracking/AB# : Or see attached ~~Or N/A~~	
→For samples received with payment, note amount ($) and whether cash / check / CC (**circle one**) was received.		
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): ~~Bubble Wrap~~ Separate plastic bags Vermiculite Other: ____	~~Yes~~ No N/A	***Note: some samples are sent to Anchorage without inspection by SGS Fairbanks personnel.***
Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	~~Yes~~ No N/A	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No ~~N/A~~ Yes No ~~N/A~~	

Additional notes (if applicable):

Profile #: Need New

Note to Client: any "no" circled above indicates non-compliance with standard procedures and may impact data quality.

e-Sample Receipt Form

SGS Workorder #: **1189757**

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	YES	1F 1B
COC accompanied samples?	YES	
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)?	YES	Cooler ID: 1 @ 1.2 °C Therm. ID: D36
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
If samples received without 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?	YES	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	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)	YES	
		N/A ***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	YES	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	YES	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	YES	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1189757001-A	No Preservative Required	OK			
1189757001-B	Methanol field pres. 4 C	OK			
1189757002-A	No Preservative Required	OK			
1189757002-B	Methanol field pres. 4 C	OK			
1189757003-A	No Preservative Required	OK			
1189757003-B	Methanol field pres. 4 C	OK			
1189757004-A	No Preservative Required	OK			
1189757004-B	Methanol field pres. 4 C	OK			
1189757005-A	No Preservative Required	OK			
1189757005-B	Methanol field pres. 4 C	OK			
1189757006-A	No Preservative Required	OK			
1189757006-B	Methanol field pres. 4 C	OK			
1189757007-A	No Preservative Required	OK			
1189757007-B	Methanol field pres. 4 C	OK			
1189757008-A	Methanol field pres. 4 C	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.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
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.

SGS

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707

Report Number: **1189758**

Client Project: **101607 1066 ELIZ**

Dear Sheila Hinckley,

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 Jennifer 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.

Stephen C. Ede
Alaska Division Technical Director

Stephen Ede
2018.09.24
15:48:12 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1189758**
Project Name/Site: **101607 1066 ELIZ**
Project Contact: **Sheila Hinckley**

Refer to sample receipt form for information on sample condition.

TWP18-01 (1189758001) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene-d10 and Fluoranthene-d10 do not meet QC criteria due to matrix interference.

TWP18-101 (1189758002) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.

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

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
SW8260C				
1189758001	TWP18-01	VMS18329	4-Isopropyltoluene	SP
1189758001	TWP18-01	VMS18329	Chloromethane	RSP
1476654	1185195008(1476653MS)	VMS18329	Chloromethane	RSP
1476655	1185195008(1476653MSD)	VMS18329	Chloromethane	RSP

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: 09/24/2018 3:35:47PM

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, indenmification 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) & 17-021 (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	Analytical 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.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
TWP18-01	1189758001	09/16/2018	09/18/2018	Water (Surface, Eff., Ground)
TWP18-101	1189758002	09/16/2018	09/18/2018	Water (Surface, Eff., Ground)
TWP18-02	1189758003	09/16/2018	09/18/2018	Water (Surface, Eff., Ground)
TWP18-03	1189758004	09/16/2018	09/18/2018	Water (Surface, Eff., Ground)
Trip Blank	1189758005	09/16/2018	09/18/2018	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
AK102	DRO Low Volume (W)
AK101	Gasoline Range Organics (W)
SW8260C	Volatile Organic Compounds (W)
SW8260C	Volatile Organic Compounds (W) FULL

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Detectable Results Summary

Client Sample ID: **TWP18-01**
Lab Sample ID: 1189758001

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	2.27	ug/L
	2-Methylnaphthalene	1.51	ug/L
	Acenaphthene	2.10	ug/L
	Naphthalene	3.54	ug/L
	Phenanthrene	0.755	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	35.0	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	16.4	ug/L
	1,3,5-Trimethylbenzene	7.95	ug/L
	2-Butanone (MEK)	4.63J	ug/L
	4-Isopropyltoluene	1.38	ug/L
	Benzene	2.17	ug/L
	Chloromethane	0.530J	ug/L
	Ethylbenzene	7.52	ug/L
	Isopropylbenzene (Cumene)	3.04	ug/L
	Naphthalene	16.5	ug/L
	n-Propylbenzene	4.95	ug/L
	o-Xylene	0.320J	ug/L
	P & M -Xylene	7.03	ug/L
	sec-Butylbenzene	1.57	ug/L
	Xylenes (total)	7.35	ug/L

Client Sample ID: **TWP18-101**
Lab Sample ID: 1189758002

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	37.4	mg/L
Volatile Fuels	Gasoline Range Organics	0.683	mg/L
Volatile GC/MS	Benzene	2.69	ug/L
	Ethylbenzene	9.12	ug/L
	o-Xylene	0.360J	ug/L
	P & M -Xylene	8.52	ug/L
	Xylenes (total)	8.88	ug/L

Client Sample ID: **TWP18-02**
Lab Sample ID: 1189758003

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	1.39	mg/L
Volatile Fuels	Gasoline Range Organics	0.0866J	mg/L
Volatile GC/MS	Benzene	0.600	ug/L
	Ethylbenzene	0.750J	ug/L
	o-Xylene	7.32	ug/L
	P & M -Xylene	1.00J	ug/L
	Xylenes (total)	8.32	ug/L

Client Sample ID: **TWP18-03**
Lab Sample ID: 1189758004

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	4.92	mg/L
Volatile Fuels	Gasoline Range Organics	0.111	mg/L
Volatile GC/MS	o-Xylene	0.450J	ug/L

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Results of **TWP18-01**

Client Sample ID: **TWP18-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758001
Lab Project ID: 1189758

Collection Date: 09/16/18 08:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	2.27		0.0463	0.0139	ug/L	1		09/23/18 13:34
2-Methylnaphthalene	1.51		0.0463	0.0139	ug/L	1		09/23/18 13:34
Acenaphthene	2.10		0.0463	0.0139	ug/L	1		09/23/18 13:34
Acenaphthylene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Anthracene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Benzo(a)Anthracene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Benzo[a]pyrene	0.00925 U		0.0185	0.00574	ug/L	1		09/23/18 13:34
Benzo[b]Fluoranthene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Benzo[g,h,i]perylene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Benzo[k]fluoranthene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Chrysene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Dibenzo[a,h]anthracene	0.00925 U		0.0185	0.00574	ug/L	1		09/23/18 13:34
Fluoranthene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Fluorene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Indeno[1,2,3-c,d] pyrene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Naphthalene	3.54		0.0926	0.0287	ug/L	1		09/23/18 13:34
Phenanthrene	0.755		0.0463	0.0139	ug/L	1		09/23/18 13:34
Pyrene	0.0232 U		0.0463	0.0139	ug/L	1		09/23/18 13:34
Surrogates								
2-Methylnaphthalene-d10 (surr)	24.1	*	47-106		%	1		09/23/18 13:34
Fluoranthene-d10 (surr)	18.8	*	24-116		%	1		09/23/18 13:34

Batch Information

Analytical Batch: XMS11092
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/23/18 13:34
Container ID: 1189758001-F

Prep Batch: XXX40521
Prep Method: SW3520C
Prep Date/Time: 09/20/18 08:06
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Print Date: 09/24/2018 3:35:51PM

J flagging is activated

Results of **TWP18-01**

Client Sample ID: **TWP18-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758001
Lab Project ID: 1189758

Collection Date: 09/16/18 08:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	35.0		0.566	0.170	mg/L	1		09/19/18 19:29
Surrogates								
5a Androstane (surr)	88.3		50-150		%	1		09/19/18 19:29

Batch Information

Analytical Batch: XFC14619
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 09/19/18 19:29
Container ID: 1189758001-D

Prep Batch: XXX40512
Prep Method: SW3520C
Prep Date/Time: 09/19/18 08:02
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

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Results of **TWP18-01**

Client Sample ID: **TWP18-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758001
Lab Project ID: 1189758

Collection Date: 09/16/18 08:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/19/18 18:11
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/19/18 18:11
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/19/18 18:11
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
1,2,4-Trimethylbenzene	16.4		1.00	0.310	ug/L	1		09/19/18 18:11
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/19/18 18:11
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/19/18 18:11
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/19/18 18:11
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
1,3,5-Trimethylbenzene	7.95		1.00	0.310	ug/L	1		09/19/18 18:11
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/19/18 18:11
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/19/18 18:11
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
2-Butanone (MEK)	4.63	J	10.0	3.10	ug/L	1		09/19/18 18:11
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/19/18 18:11
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
4-Isopropyltoluene	1.38		1.00	0.310	ug/L	1		09/19/18 18:11
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/19/18 18:11
Benzene	2.17		0.400	0.120	ug/L	1		09/19/18 18:11
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/19/18 18:11
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/19/18 18:11
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/19/18 18:11
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/19/18 18:11
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:11

Print Date: 09/24/2018 3:35:51PM

J flagging is activated

Results of **TWP18-01**

Client Sample ID: **TWP18-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758001
Lab Project ID: 1189758

Collection Date: 09/16/18 08:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
Chloromethane	0.530 J		1.00	0.310	ug/L	1		09/19/18 18:11
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/19/18 18:11
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/19/18 18:11
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
Ethylbenzene	7.52		1.00	0.310	ug/L	1		09/19/18 18:11
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/19/18 18:11
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
Isopropylbenzene (Cumene)	3.04		1.00	0.310	ug/L	1		09/19/18 18:11
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		09/19/18 18:11
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/19/18 18:11
Naphthalene	16.5		1.00	0.310	ug/L	1		09/19/18 18:11
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
n-Propylbenzene	4.95		1.00	0.310	ug/L	1		09/19/18 18:11
o-Xylene	0.320 J		1.00	0.310	ug/L	1		09/19/18 18:11
P & M -Xylene	7.03		2.00	0.620	ug/L	1		09/19/18 18:11
sec-Butylbenzene	1.57		1.00	0.310	ug/L	1		09/19/18 18:11
Styrene	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
Toluene	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/19/18 18:11
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/19/18 18:11
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/19/18 18:11
Xylenes (total)	7.35		3.00	1.00	ug/L	1		09/19/18 18:11
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		09/19/18 18:11
4-Bromofluorobenzene (surr)	102		85-114		%	1		09/19/18 18:11
Toluene-d8 (surr)	102		89-112		%	1		09/19/18 18:11

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Results of **TWP18-01**

Client Sample ID: **TWP18-01**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758001
Lab Project ID: 1189758

Collection Date: 09/16/18 08:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18329
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 09/19/18 18:11
Container ID: 1189758001-A

Prep Batch: VXX33145
Prep Method: SW5030B
Prep Date/Time: 09/19/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **TWP18-101**

Client Sample ID: **TWP18-101**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758002
Lab Project ID: 1189758

Collection Date: 09/16/18 08:40
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	37.4		0.577	0.173	mg/L	1		09/19/18 19:39
Surrogates								
5a Androstane (surr)	89.4		50-150		%	1		09/19/18 19:39

Batch Information

Analytical Batch: XFC14619
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 09/19/18 19:39
Container ID: 1189758002-D

Prep Batch: XXX40512
Prep Method: SW3520C
Prep Date/Time: 09/19/18 08:02
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

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Results of **TWP18-101**

Client Sample ID: **TWP18-101**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758002
Lab Project ID: 1189758

Collection Date: 09/16/18 08:40
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.683		0.100	0.0310	mg/L	1		09/20/18 03:09
Surrogates								
4-Bromofluorobenzene (surr)	166	*	50-150		%	1		09/20/18 03:09

Batch Information

Analytical Batch: VFC14437
Analytical Method: AK101
Analyst: ACL
Analytical Date/Time: 09/20/18 03:09
Container ID: 1189758002-B

Prep Batch: VXX33146
Prep Method: SW5030B
Prep Date/Time: 09/19/18 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **TWP18-101**

Client Sample ID: **TWP18-101**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758002
Lab Project ID: 1189758

Collection Date: 09/16/18 08:40
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	2.69		0.400	0.120	ug/L	1		09/19/18 18:28
Ethylbenzene	9.12		1.00	0.310	ug/L	1		09/19/18 18:28
o-Xylene	0.360	J	1.00	0.310	ug/L	1		09/19/18 18:28
P & M -Xylene	8.52		2.00	0.620	ug/L	1		09/19/18 18:28
Toluene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:28
Xylenes (total)	8.88		3.00	1.00	ug/L	1		09/19/18 18:28
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		81-118		%	1		09/19/18 18:28
4-Bromofluorobenzene (surr)	102		85-114		%	1		09/19/18 18:28
Toluene-d8 (surr)	99.8		89-112		%	1		09/19/18 18:28

Batch Information

Analytical Batch: VMS18329
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 09/19/18 18:28
Container ID: 1189758002-A

Prep Batch: VXX33145
Prep Method: SW5030B
Prep Date/Time: 09/19/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **TWP18-02**

Client Sample ID: **TWP18-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758003
Lab Project ID: 1189758

Collection Date: 09/16/18 09:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	1.39		0.577	0.173	mg/L	1		09/19/18 19:49
Surrogates								
5a Androstane (surr)	68.3		50-150		%	1		09/19/18 19:49

Batch Information

Analytical Batch: XFC14619
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 09/19/18 19:49
Container ID: 1189758003-D

Prep Batch: XXX40512
Prep Method: SW3520C
Prep Date/Time: 09/19/18 08:02
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

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Results of **TWP18-02**

Client Sample ID: **TWP18-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758003
Lab Project ID: 1189758

Collection Date: 09/16/18 09:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0866	J	0.100	0.0310	mg/L	1		09/20/18 03:27
Surrogates								
4-Bromofluorobenzene (surr)	114		50-150		%	1		09/20/18 03:27

Batch Information

Analytical Batch: VFC14437
Analytical Method: AK101
Analyst: ACL
Analytical Date/Time: 09/20/18 03:27
Container ID: 1189758003-B

Prep Batch: VXX33146
Prep Method: SW5030B
Prep Date/Time: 09/19/18 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **TWP18-02**

Client Sample ID: **TWP18-02**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758003
Lab Project ID: 1189758

Collection Date: 09/16/18 09:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.600		0.400	0.120	ug/L	1		09/19/18 18:45
Ethylbenzene	0.750	J	1.00	0.310	ug/L	1		09/19/18 18:45
o-Xylene	7.32		1.00	0.310	ug/L	1		09/19/18 18:45
P & M -Xylene	1.00	J	2.00	0.620	ug/L	1		09/19/18 18:45
Toluene	0.500	U	1.00	0.310	ug/L	1		09/19/18 18:45
Xylenes (total)	8.32		3.00	1.00	ug/L	1		09/19/18 18:45
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		09/19/18 18:45
4-Bromofluorobenzene (surr)	95.6		85-114		%	1		09/19/18 18:45
Toluene-d8 (surr)	101		89-112		%	1		09/19/18 18:45

Batch Information

Analytical Batch: VMS18329
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 09/19/18 18:45
Container ID: 1189758003-A

Prep Batch: VXX33145
Prep Method: SW5030B
Prep Date/Time: 09/19/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/24/2018 3:35:51PM

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Results of **TWP18-03**

Client Sample ID: **TWP18-03**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758004
Lab Project ID: 1189758

Collection Date: 09/16/18 10:45
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	4.92		0.577	0.173	mg/L	1		09/19/18 19:59
Surrogates								
5a Androstane (surr)	78.9		50-150		%	1		09/19/18 19:59

Batch Information

Analytical Batch: XFC14619
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 09/19/18 19:59
Container ID: 1189758004-D

Prep Batch: XXX40512
Prep Method: SW3520C
Prep Date/Time: 09/19/18 08:02
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

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Results of **TWP18-03**

Client Sample ID: **TWP18-03**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758004
Lab Project ID: 1189758

Collection Date: 09/16/18 10:45
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.111		0.100	0.0310	mg/L	1		09/20/18 03:45
Surrogates								
4-Bromofluorobenzene (surr)	106		50-150		%	1		09/20/18 03:45

Batch Information

Analytical Batch: VFC14437
Analytical Method: AK101
Analyst: ACL
Analytical Date/Time: 09/20/18 03:45
Container ID: 1189758004-B

Prep Batch: VXX33146
Prep Method: SW5030B
Prep Date/Time: 09/19/18 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **TWP18-03**

Client Sample ID: **TWP18-03**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758004
Lab Project ID: 1189758

Collection Date: 09/16/18 10:45
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.200	U	0.400	0.120	ug/L	1		09/19/18 19:01
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 19:01
o-Xylene	0.450	J	1.00	0.310	ug/L	1		09/19/18 19:01
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		09/19/18 19:01
Toluene	0.500	U	1.00	0.310	ug/L	1		09/19/18 19:01
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		09/19/18 19:01
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		09/19/18 19:01
4-Bromofluorobenzene (surr)	97.6		85-114		%	1		09/19/18 19:01
Toluene-d8 (surr)	101		89-112		%	1		09/19/18 19:01

Batch Information

Analytical Batch: VMS18329
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 09/19/18 19:01
Container ID: 1189758004-A

Prep Batch: VXX33145
Prep Method: SW5030B
Prep Date/Time: 09/19/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758005
Lab Project ID: 1189758

Collection Date: 09/16/18 08:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		09/20/18 02:52
Surrogates								
4-Bromofluorobenzene (surr)	91.2		50-150		%	1		09/20/18 02:52

Batch Information

Analytical Batch: VFC14437
Analytical Method: AK101
Analyst: ACL
Analytical Date/Time: 09/20/18 02:52
Container ID: 1189758005-B

Prep Batch: VXX33146
Prep Method: SW5030B
Prep Date/Time: 09/19/18 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758005
Lab Project ID: 1189758

Collection Date: 09/16/18 08:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/19/18 15:08
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/19/18 15:08
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/19/18 15:08
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/19/18 15:08
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/19/18 15:08
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/19/18 15:08
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/19/18 15:08
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/19/18 15:08
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/19/18 15:08
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/19/18 15:08
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/19/18 15:08
Benzene	0.200	U	0.400	0.120	ug/L	1		09/19/18 15:08
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/19/18 15:08
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/19/18 15:08
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/19/18 15:08
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/19/18 15:08
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/19/18 15:08

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758005
Lab Project ID: 1189758

Collection Date: 09/16/18 08:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/19/18 15:08
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/19/18 15:08
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/19/18 15:08
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		09/19/18 15:08
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/19/18 15:08
Naphthalene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/19/18 15:08
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Styrene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Toluene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/19/18 15:08
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/19/18 15:08
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/19/18 15:08
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/19/18 15:08
Surrogates								
1,2-Dichloroethane-D4 (surr)	111		81-118		%	1		09/19/18 15:08
4-Bromofluorobenzene (surr)	95.8		85-114		%	1		09/19/18 15:08
Toluene-d8 (surr)	102		89-112		%	1		09/19/18 15:08

Print Date: 09/24/2018 3:35:51PM

J flagging is activated

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **101607 1066 ELIZ**
Lab Sample ID: 1189758005
Lab Project ID: 1189758

Collection Date: 09/16/18 08:30
Received Date: 09/18/18 09:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18329
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 09/19/18 15:08
Container ID: 1189758005-A

Prep Batch: VXX33145
Prep Method: SW5030B
Prep Date/Time: 09/19/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1786326 [VXX/33145]
Blank Lab ID: 1476650

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189758001, 1189758002, 1189758003, 1189758004, 1189758005

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
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

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Method Blank

Blank ID: MB for HBN 1786326 [VXX/33145]
Blank Lab ID: 1476650

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189758001, 1189758002, 1189758003, 1189758004, 1189758005

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Chloromethane	0.500U	1.00	0.310	ug/L
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)	103	81-118		%
4-Bromofluorobenzene (surr)	97.5	85-114		%
Toluene-d8 (surr)	101	89-112		%

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Method Blank

Blank ID: MB for HBN 1786326 [VXX/33145]
Blank Lab ID: 1476650

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189758001, 1189758002, 1189758003, 1189758004, 1189758005

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS18329
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: FDR
Analytical Date/Time: 9/19/2018 11:55:00AM

Prep Batch: VXX33145
Prep Method: SW5030B
Prep Date/Time: 9/19/2018 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Leaching Blank

Blank ID: LB for HBN 1786228 [TCLP/9685]
Blank Lab ID: 1476141

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189758001, 1189758002, 1189758003, 1189758004, 1189758005

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,1-Dichloroethene	25.0U	50.0	15.5	ug/L
1,2-Dichloroethane	12.5U	25.0	7.50	ug/L
1,4-Dichlorobenzene	12.5U	25.0	7.50	ug/L
2-Butanone (MEK)	250U	500	155	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Carbon tetrachloride	25.0U	50.0	15.5	ug/L
Chlorobenzene	12.5U	25.0	7.50	ug/L
Chloroform	25.0U	50.0	15.5	ug/L
Hexachlorobutadiene	25.0U	50.0	15.5	ug/L
Tetrachloroethene	25.0U	50.0	15.5	ug/L
Trichloroethene	25.0U	50.0	15.5	ug/L
Vinyl chloride	3.75U	7.50	2.50	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	111	81-118		%
4-Bromofluorobenzene (surr)	95.5	85-114		%
Toluene-d8 (surr)	102	89-112		%

Batch Information

Analytical Batch: VMS18329
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: FDR
Analytical Date/Time: 9/19/2018 2:35:00PM

Prep Batch: VXX33145
Prep Method: SW5030B
Prep Date/Time: 9/19/2018 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1189758 [VXX33145]
Blank Spike Lab ID: 1476651
Date Analyzed: 09/19/2018 12:12

Spike Duplicate ID: LCSD for HBN 1189758 [VXX33145]
Spike Duplicate Lab ID: 1476652
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189758001, 1189758002, 1189758003, 1189758004, 1189758005

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	30	29.8	99	30	28.8	96	(78-124)	3.50	(< 20)
1,1,1-Trichloroethane	30	29.6	99	30	29.0	97	(74-131)	1.80	(< 20)
1,1,2,2-Tetrachloroethane	30	28.6	95	30	27.9	93	(71-121)	2.50	(< 20)
1,1,2-Trichloroethane	30	28.8	96	30	28.5	95	(80-119)	1.10	(< 20)
1,1-Dichloroethane	30	29.0	97	30	28.4	95	(77-125)	2.00	(< 20)
1,1-Dichloroethene	30	30.9	103	30	30.7	102	(71-131)	0.91	(< 20)
1,1-Dichloropropene	30	29.5	98	30	29.1	97	(79-125)	1.20	(< 20)
1,2,3-Trichlorobenzene	30	29.0	97	30	28.9	96	(69-129)	0.38	(< 20)
1,2,3-Trichloropropane	30	28.5	95	30	27.7	92	(73-122)	2.70	(< 20)
1,2,4-Trichlorobenzene	30	29.7	99	30	29.8	100	(69-130)	0.47	(< 20)
1,2,4-Trimethylbenzene	30	29.2	98	30	28.9	96	(79-124)	1.30	(< 20)
1,2-Dibromo-3-chloropropane	30	26.8	89	30	25.9	86	(62-128)	3.50	(< 20)
1,2-Dibromoethane	30	29.7	99	30	29.1	97	(77-121)	2.10	(< 20)
1,2-Dichlorobenzene	30	29.3	98	30	29.1	97	(80-119)	0.86	(< 20)
1,2-Dichloroethane	30	28.9	96	30	28.5	95	(73-128)	1.40	(< 20)
1,2-Dichloropropane	30	29.6	99	30	28.9	96	(78-122)	2.60	(< 20)
1,3,5-Trimethylbenzene	30	28.9	96	30	28.7	96	(75-124)	0.73	(< 20)
1,3-Dichlorobenzene	30	29.3	98	30	29.2	97	(80-119)	0.31	(< 20)
1,3-Dichloropropane	30	29.2	97	30	28.8	96	(80-119)	1.50	(< 20)
1,4-Dichlorobenzene	30	29.8	99	30	29.3	98	(79-118)	1.60	(< 20)
2,2-Dichloropropane	30	30.4	101	30	29.9	100	(60-139)	1.70	(< 20)
2-Butanone (MEK)	90	79.0	88	90	75.3	84	(56-143)	4.80	(< 20)
2-Chlorotoluene	30	28.7	96	30	28.3	94	(79-122)	1.30	(< 20)
2-Hexanone	90	80.9	90	90	77.5	86	(57-139)	4.30	(< 20)
4-Chlorotoluene	30	29.0	97	30	28.5	95	(78-122)	1.70	(< 20)
4-Isopropyltoluene	30	28.9	96	30	29.4	98	(77-127)	1.60	(< 20)
4-Methyl-2-pentanone (MIBK)	90	87.5	97	90	82.2	91	(67-130)	6.20	(< 20)
Benzene	30	29.9	100	30	29.6	99	(79-120)	0.81	(< 20)
Bromobenzene	30	29.5	98	30	29.1	97	(80-120)	1.50	(< 20)
Bromochloromethane	30	31.7	106	30	31.5	105	(78-123)	0.41	(< 20)
Bromodichloromethane	30	29.7	99	30	29.2	97	(79-125)	1.80	(< 20)
Bromoform	30	29.0	97	30	28.7	96	(66-130)	1.10	(< 20)
Bromomethane	30	34.0	113	30	36.1	120	(53-141)	5.80	(< 20)
Carbon disulfide	45	45.7	102	45	46.2	103	(64-133)	0.98	(< 20)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189758 [VXX33145]
Blank Spike Lab ID: 1476651
Date Analyzed: 09/19/2018 12:12

Spike Duplicate ID: LCSD for HBN 1189758 [VXX33145]
Spike Duplicate Lab ID: 1476652
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189758001, 1189758002, 1189758003, 1189758004, 1189758005

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Carbon tetrachloride	30	30.3	101	30	30.0	100	(72-136)	1.00	(< 20)
Chlorobenzene	30	28.6	95	30	27.9	93	(82-118)	2.50	(< 20)
Chloroethane	30	31.6	105	30	29.6	99	(60-138)	6.40	(< 20)
Chloroform	30	28.8	96	30	28.4	95	(79-124)	1.60	(< 20)
Chloromethane	30	27.2	91	30	27.7	93	(50-139)	2.00	(< 20)
cis-1,2-Dichloroethene	30	29.9	100	30	29.5	98	(78-123)	1.50	(< 20)
cis-1,3-Dichloropropene	30	29.7	99	30	29.2	97	(75-124)	1.70	(< 20)
Dibromochloromethane	30	29.8	99	30	29.4	98	(74-126)	1.40	(< 20)
Dibromomethane	30	30.4	101	30	30.0	100	(79-123)	1.40	(< 20)
Dichlorodifluoromethane	30	27.4	91	30	27.2	91	(32-152)	0.73	(< 20)
Ethylbenzene	30	29.9	100	30	29.1	97	(79-121)	2.90	(< 20)
Freon-113	45	48.4	108	45	47.9	106	(70-136)	1.00	(< 20)
Hexachlorobutadiene	30	30.7	102	30	31.7	106	(66-134)	3.20	(< 20)
Isopropylbenzene (Cumene)	30	29.9	100	30	29.7	99	(72-131)	0.64	(< 20)
Methylene chloride	30	30.2	101	30	29.6	99	(74-124)	2.00	(< 20)
Methyl-t-butyl ether	45	43.9	98	45	43.3	96	(71-124)	1.20	(< 20)
Naphthalene	30	28.4	95	30	28.9	96	(61-128)	1.70	(< 20)
n-Butylbenzene	30	30.0	100	30	29.5	98	(75-128)	1.60	(< 20)
n-Propylbenzene	30	29.3	98	30	28.8	96	(76-126)	1.80	(< 20)
o-Xylene	30	29.9	100	30	29.3	98	(78-122)	2.00	(< 20)
P & M -Xylene	60	59.7	100	60	58.3	97	(80-121)	2.50	(< 20)
sec-Butylbenzene	30	29.7	99	30	29.2	97	(77-126)	1.70	(< 20)
Styrene	30	29.6	99	30	28.9	96	(78-123)	2.20	(< 20)
tert-Butylbenzene	30	28.9	96	30	28.7	96	(78-124)	0.49	(< 20)
Tetrachloroethene	30	31.5	105	30	30.7	102	(74-129)	2.50	(< 20)
Toluene	30	28.2	94	30	27.5	92	(80-121)	2.30	(< 20)
trans-1,2-Dichloroethene	30	29.7	99	30	29.5	98	(75-124)	0.91	(< 20)
trans-1,3-Dichloropropene	30	29.1	97	30	28.6	95	(73-127)	1.70	(< 20)
Trichloroethene	30	30.2	101	30	29.5	98	(79-123)	2.10	(< 20)
Trichlorofluoromethane	30	31.0	103	30	30.9	103	(65-141)	0.26	(< 20)
Vinyl acetate	30	28.3	95	30	28.1	94	(54-146)	0.96	(< 20)
Vinyl chloride	30	27.3	91	30	27.1	90	(58-137)	0.74	(< 20)
Xylenes (total)	90	89.6	100	90	87.5	97	(79-121)	2.30	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1189758 [VXX33145]
Blank Spike Lab ID: 1476651
Date Analyzed: 09/19/2018 12:12

Spike Duplicate ID: LCSD for HBN 1189758 [VXX33145]
Spike Duplicate Lab ID: 1476652
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189758001, 1189758002, 1189758003, 1189758004, 1189758005

Results by **SW8260C**

	Blank Spike (%)			Spike Duplicate (%)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	97.9	98	30	98.3	98	(81-118)	0.37	
4-Bromofluorobenzene (surr)	30	97	97	30	97.4	97	(85-114)	0.38	
Toluene-d8 (surr)	30	102	102	30	102	102	(89-112)	0.20	

Batch Information

Analytical Batch: **VMS18329**
Analytical Method: **SW8260C**
Instrument: **Agilent 7890-75MS**
Analyst: **FDR**

Prep Batch: **VXX33145**
Prep Method: **SW5030B**
Prep Date/Time: **09/19/2018 00:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

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Matrix Spike Summary

Original Sample ID: 1476653
MS Sample ID: 1476654 MS
MSD Sample ID: 1476655 MSD

Analysis Date: 09/19/2018 16:32
Analysis Date: 09/19/2018 13:29
Analysis Date: 09/19/2018 13:45
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189758001, 1189758002, 1189758003, 1189758004, 1189758005

Results by **SW8260C**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	25.0U	3000	2800	93	3000	2940	98	78-124	4.80	(< 20)
1,1,1-Trichloroethane	50.0U	3000	3010	100	3000	2920	97	74-131	3.00	(< 20)
1,1,2,2-Tetrachloroethane	25.0U	3000	2960	99	3000	3010	100	71-121	1.60	(< 20)
1,1,2-Trichloroethane	20.0U	3000	2820	94	3000	2870	96	80-119	1.80	(< 20)
1,1-Dichloroethane	50.0U	3000	2940	98	3000	2860	95	77-125	2.90	(< 20)
1,1-Dichloroethene	50.0U	3000	3180	106	3000	3100	103	71-131	2.70	(< 20)
1,1-Dichloropropene	50.0U	3000	3030	101	3000	2950	98	79-125	2.90	(< 20)
1,2,3-Trichlorobenzene	50.0U	3000	3040	101	3000	3130	104	69-129	3.00	(< 20)
1,2,3-Trichloropropane	50.0U	3000	2830	94	3000	2910	97	73-122	2.70	(< 20)
1,2,4-Trichlorobenzene	50.0U	3000	3060	102	3000	3080	103	69-130	0.55	(< 20)
1,2,4-Trimethylbenzene	155	3000	3050	96	3000	3020	96	79-124	0.82	(< 20)
1,2-Dibromo-3-chloropropane	500U	3000	2790	93	3000	2870	96	62-128	2.90	(< 20)
1,2-Dibromoethane	306	3000	3200	96	3000	3250	98	77-121	1.80	(< 20)
1,2-Dichlorobenzene	50.0U	3000	2920	97	3000	2940	98	80-119	0.78	(< 20)
1,2-Dichloroethane	279	3000	3200	97	3000	3130	95	73-128	2.10	(< 20)
1,2-Dichloropropane	50.0U	3000	3000	100	3000	2920	98	78-122	2.50	(< 20)
1,3,5-Trimethylbenzene	37.0J	3000	2930	97	3000	2880	95	75-124	1.70	(< 20)
1,3-Dichlorobenzene	50.0U	3000	2950	98	3000	2920	97	80-119	0.75	(< 20)
1,3-Dichloropropane	25.0U	3000	2840	95	3000	2890	96	80-119	1.90	(< 20)
1,4-Dichlorobenzene	25.0U	3000	2910	97	3000	2970	99	79-118	1.90	(< 20)
2,2-Dichloropropane	50.0U	3000	3050	102	3000	2950	98	60-139	3.40	(< 20)
2-Butanone (MEK)	5050	9000	13400	93	9000	13500	94	56-143	0.74	(< 20)
2-Chlorotoluene	50.0U	3000	2860	95	3000	2850	95	79-122	0.32	(< 20)
2-Hexanone	2420	9000	10700	92	9000	11100	97	57-139	3.60	(< 20)
4-Chlorotoluene	50.0U	3000	2860	95	3000	2830	94	78-122	1.10	(< 20)
4-Isopropyltoluene	107	3000	3020	97	3000	3020	97	77-127	0.00	(< 20)
4-Methyl-2-pentanone (MIBK)	1340	9000	10200	98	9000	10400	101	67-130	2.70	(< 20)
Benzene	2340	3000	5160	94	3000	5090	92	79-120	1.30	(< 20)
Bromobenzene	50.0U	3000	2920	97	3000	2910	97	80-120	0.10	(< 20)
Bromochloromethane	50.0U	3000	3210	107	3000	3130	104	78-123	2.70	(< 20)
Bromodichloromethane	25.0U	3000	3020	101	3000	2950	98	79-125	2.50	(< 20)
Bromoform	50.0U	3000	2830	94	3000	2910	97	66-130	2.80	(< 20)
Bromomethane	250U	3000	3850	128	3000	3780	126	53-141	2.00	(< 20)
Carbon disulfide	500U	4500	4610	102	4500	4410	98	64-133	4.40	(< 20)
Carbon tetrachloride	50.0U	3000	3060	102	3000	2990	100	72-136	2.60	(< 20)
Chlorobenzene	25.0U	3000	2800	94	3000	2800	93	82-118	0.07	(< 20)
Chloroethane	50.0U	3000	3210	107	3000	3090	103	60-138	3.80	(< 20)

Print Date: 09/24/2018 3:35:54PM

Matrix Spike Summary

Original Sample ID: 1476653
MS Sample ID: 1476654 MS
MSD Sample ID: 1476655 MSD

Analysis Date: 09/19/2018 16:32
Analysis Date: 09/19/2018 13:29
Analysis Date: 09/19/2018 13:45
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189758001, 1189758002, 1189758003, 1189758004, 1189758005

Results by **SW8260C**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Chloroform	50.0U	3000	2920	97	3000	2850	95	79-124	2.40	(< 20)
Chloromethane	50.0U	3000	2720	91	3000	2630	88	50-139	3.10	(< 20)
cis-1,2-Dichloroethene	50.0U	3000	3060	102	3000	2970	99	78-123	3.00	(< 20)
cis-1,3-Dichloropropene	25.0U	3000	3020	101	3000	2960	99	75-124	2.20	(< 20)
Dibromochloromethane	25.0U	3000	2880	96	3000	2900	97	74-126	0.66	(< 20)
Dibromomethane	50.0U	3000	3100	103	3000	3060	102	79-123	1.50	(< 20)
Dichlorodifluoromethane	50.0U	3000	2680	89	3000	2570	86	32-152	4.10	(< 20)
Ethylbenzene	685	3000	3670	100	3000	3620	98	79-121	1.60	(< 20)
Freon-113	500U	4500	4970	111	4500	4840	107	70-136	2.80	(< 20)
Hexachlorobutadiene	50.0U	3000	3120	104	3000	3060	102	66-134	2.10	(< 20)
Isopropylbenzene (Cumene)	49.0J	3000	3020	99	3000	2980	98	72-131	1.30	(< 20)
Methylene chloride	250U	3000	3080	103	3000	2990	100	74-124	3.00	(< 20)
Methyl-t-butyl ether	500U	4500	4420	98	4500	4420	98	71-124	0.02	(< 20)
Naphthalene	50.0U	3000	3110	104	3000	3240	108	61-128	4.00	(< 20)
n-Butylbenzene	50.0U	3000	2850	95	3000	2940	98	75-128	3.00	(< 20)
n-Propylbenzene	50.0U	3000	2880	96	3000	2870	96	76-126	0.45	(< 20)
o-Xylene	979	3000	3940	99	3000	3940	99	78-122	0.10	(< 20)
P & M -Xylene	2190	6000	8160	100	6000	8070	98	80-121	1.00	(< 20)
sec-Butylbenzene	50.0U	3000	2900	97	3000	2890	96	77-126	0.28	(< 20)
Styrene	50.0U	3000	2950	98	3000	2940	98	78-123	0.03	(< 20)
tert-Butylbenzene	50.0U	3000	2830	94	3000	2850	95	78-124	0.63	(< 20)
Tetrachloroethene	50.0U	3000	2930	98	3000	3030	101	74-129	3.20	(< 20)
Toluene	6890	3000	9440	85	3000	9570	89	80-121	1.30	(< 20)
trans-1,2-Dichloroethene	50.0U	3000	3010	100	3000	2940	98	75-124	2.50	(< 20)
trans-1,3-Dichloropropene	50.0U	3000	2840	95	3000	2840	95	73-127	0.00	(< 20)
Trichloroethene	50.0U	3000	3070	102	3000	2970	99	79-123	3.50	(< 20)
Trichlorofluoromethane	50.0U	3000	3140	105	3000	3070	102	65-141	2.10	(< 20)
Vinyl acetate	500U	3000	2820	94	3000	2820	94	54-146	0.11	(< 20)
Vinyl chloride	7.50U	3000	2730	91	3000	2640	88	58-137	3.10	(< 20)
Xylenes (total)	3160	9000	12100	99	9000	12000	98	79-121	0.73	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		3000	2990	100	3000	2900	97	81-118	3.20	
4-Bromofluorobenzene (surr)		3000	2890	96	3000	2850	95	85-114	1.30	
Toluene-d8 (surr)		3000	2940	98	3000	3030	101	89-112	3.10	

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Matrix Spike Summary

Original Sample ID: 1476653
MS Sample ID: 1476654 MS
MSD Sample ID: 1476655 MSD

Analysis Date:
Analysis Date: 09/19/2018 13:29
Analysis Date: 09/19/2018 13:45
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189758001, 1189758002, 1189758003, 1189758004, 1189758005

Results by **SW8260C**

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

Batch Information

Analytical Batch: VMS18329
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: FDR
Analytical Date/Time: 9/19/2018 1:29:00PM

Prep Batch: VXX33145
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 9/19/2018 12:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 09/24/2018 3:35:54PM

Method Blank

Blank ID: MB for HBN 1786332 [VXX/33146]
Blank Lab ID: 1476673

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189758002, 1189758003, 1189758004, 1189758005

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	91.5	50-150		%

Batch Information

Analytical Batch: VFC14437
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ACL
Analytical Date/Time: 9/19/2018 11:13:00AM

Prep Batch: VXX33146
Prep Method: SW5030B
Prep Date/Time: 9/19/2018 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189758 [VXX33146]
Blank Spike Lab ID: 1476674
Date Analyzed: 09/19/2018 11:49

Spike Duplicate ID: LCSD for HBN 1189758 [VXX33146]
Spike Duplicate Lab ID: 1476675
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189758002, 1189758003, 1189758004, 1189758005

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	1.03	103	1.00	1.12	112	(60-120)	8.50	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	101	101	0.0500	111	111	(50-150)	9.10	

Batch Information

Analytical Batch: **VFC14437**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ACL**

Prep Batch: **VXX33146**
Prep Method: **SW5030B**
Prep Date/Time: **09/19/2018 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

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Method Blank

Blank ID: MB for HBN 1786243 [XXX/40512]
Blank Lab ID: 1476224

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189758001, 1189758002, 1189758003, 1189758004

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	80	60-120		%

Batch Information

Analytical Batch: XFC14619
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: VDL
Analytical Date/Time: 9/19/2018 6:10:00PM

Prep Batch: XXX40512
Prep Method: SW3520C
Prep Date/Time: 9/19/2018 8:02:08AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1189758 [XXX40512]
Blank Spike Lab ID: 1476225
Date Analyzed: 09/19/2018 18:20

Spike Duplicate ID: LCSD for HBN 1189758 [XXX40512]
Spike Duplicate Lab ID: 1476226
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189758001, 1189758002, 1189758003, 1189758004

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	19.0	95	20	18.0	90	(75-125)	5.40	(< 20)
Surrogates									
5a Androstane (surr)	0.4	96.6	97	0.4	95.1	95	(60-120)	1.60	

Batch Information

Analytical Batch: **XFC14619**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **VDL**

Prep Batch: **XXX40512**
Prep Method: **SW3520C**
Prep Date/Time: **09/19/2018 08:02**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1786320 [XXX/40521]
Blank Lab ID: 1476635

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189758001

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
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-Methylnaphthalene-d10 (surr)	65	47-106		%
Fluoranthene-d10 (surr)	65.5	24-116		%

Batch Information

Analytical Batch: XMS11090
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: BMZ
Analytical Date/Time: 9/21/2018 6:29:00PM

Prep Batch: XXX40521
Prep Method: SW3520C
Prep Date/Time: 9/20/2018 8:06:25AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1189758 [XXX40521]
Blank Spike Lab ID: 1476636
Date Analyzed: 09/21/2018 18:50

Spike Duplicate ID: LCSD for HBN 1189758 [XXX40521]
Spike Duplicate Lab ID: 1476637
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189758001

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.40	70	2	1.37	69	(41-115)	1.80	(< 20)
2-Methylnaphthalene	2	1.28	64	2	1.27	63	(39-114)	1.10	(< 20)
Acenaphthene	2	1.61	80	2	1.58	79	(48-114)	1.70	(< 20)
Acenaphthylene	2	1.48	74	2	1.43	71	(35-121)	3.60	(< 20)
Anthracene	2	1.69	84	2	1.60	80	(53-119)	5.20	(< 20)
Benzo(a)Anthracene	2	1.51	75	2	1.43	72	(59-120)	5.00	(< 20)
Benzo[a]pyrene	2	1.53	77	2	1.48	74	(53-120)	3.90	(< 20)
Benzo[b]Fluoranthene	2	1.62	81	2	1.57	78	(53-126)	2.90	(< 20)
Benzo[g,h,i]perylene	2	1.60	80	2	1.55	78	(44-128)	2.90	(< 20)
Benzo[k]fluoranthene	2	1.73	87	2	1.65	83	(54-125)	4.70	(< 20)
Chrysene	2	1.61	81	2	1.53	77	(57-120)	5.00	(< 20)
Dibenzo[a,h]anthracene	2	1.61	80	2	1.56	78	(44-131)	3.30	(< 20)
Fluoranthene	2	1.41	71	2	1.34	67	(58-120)	5.00	(< 20)
Fluorene	2	1.57	78	2	1.51	76	(50-118)	3.70	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.63	82	2	1.57	78	(48-130)	3.90	(< 20)
Naphthalene	2	1.29	65	2	1.29	64	(43-114)	0.34	(< 20)
Phenanthrene	2	1.59	80	2	1.53	76	(53-115)	4.10	(< 20)
Pyrene	2	1.47	74	2	1.41	70	(53-121)	4.70	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	65.9	66	2	69	69	(47-106)	4.50	
Fluoranthene-d10 (surr)	2	71.6	72	2	71	71	(24-116)	0.88	

Batch Information

Analytical Batch: **XMS11090**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **BMZ**

Prep Batch: **XXX40521**
Prep Method: **SW3520C**
Prep Date/Time: **09/20/2018 08:06**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 09/24/2018 3:36:01PM

REVIEWED HCT

1189758

SHANNON & WILSON, INC. CHAIN-OF-RECORD

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

Laboratory SGS

Attn:

Turn Around Time: ☑ Normal ☐ Rush — Please Specify

Quote No:

J-Flags: ☑ Yes ☐ No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	DRO [HCl] (AK102)	PAH (8270 SIM)	BTEX/GRO [HCl] (8260) / (AK101)	VOCs (SW8260C)				Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
TWP18-01	1 A-G	830	9/16/18	X	X		X				7	Groundwater/Sheen
TWP18-101	2 A-E	840	↓	X		X					5	↓ ↓
TWP18-02	3 A-E	930		X		X					5	
TWP18-03	4 A-E	1045		X		X					5	
Trip Blank	5 A-C					X	X				3	Lab Provided

Project Information	
Number:	1016007
Name:	1066 ELIZ
Contact:	SMH
Ongoing Project?	Yes ☑ No ☐
Sampler:	CAB, JXS

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	3.5
Delivery Method:	

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 1247	Signature: Time: 1550	Signature: Time:
Printed Name: Kevin Chancey Date: 9/17/18	Printed Name: Date: 9-17-18	Printed Name: Date:
Company: STW	Company: SGS	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1247	Signature: Time:	Signature: Time: 0945
Printed Name: Ben Doerkers Date: 9-17-18	Printed Name: Date:	Printed Name: Amanda Tabor Date: 9/18/18
Company: SGS	Company:	Company: SGS

Notes:

*Trip Blank Kept w/ project samples & throughout project

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

ANC: 1.2D36
1-F, 1-B

No. 35639

SGS

1189758

FAIRBANKS SAMPLE RECEIPT FORM

Note: This form is to be completed by Fairbanks Receiving Staff for all samples

Review Criteria:	Condition:	Comments/Actions Taken
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No ~~N/A~~ ~~Yes~~ No N/A	□*Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C) *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ 3.5 w/Therm. ID: D40 Cooler ID: ____ @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank and "**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 ( ). Please check one.	~~Yes~~ No Yes No ~~N/A~~ Yes No ~~N/A~~	□*Exemption permitted if chilled & collected <8hrs ago* ***Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.***
Delivery Method: ~~Client~~ (hand carried) Other: ____	Tracking/AB# : Or see attached ~~Or N/A~~	
→For samples received with payment, note amount ($) and whether cash / check / CC (**circle one**) was received.		
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): ~~Bubble Wrap~~ Separate plastic bags Vermiculite Other: ____	~~Yes~~ No N/A	***Note: some samples are sent to Anchorage without inspection by SGS Fairbanks personnel.***
Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	~~Yes~~ No N/A	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No ~~N/A~~ Yes No ~~N/A~~	

Additional notes (if applicable):

Profile #: Need WO

Note to Client: any "no" circled above indicates non-compliance with standard procedures and may impact data quality.

e-Sample Receipt Form

SGS Workorder #: **1189758**

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	YES	1F 1B
COC accompanied samples?	YES	
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)?	YES	Cooler ID: 1 @ 1.2 °C Therm. ID: D36
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
If samples received without 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?	YES	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	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)	YES	
		N/A ***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	YES	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	YES	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	YES	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1189758001-A	HCL to pH < 2	OK			
1189758001-B	HCL to pH < 2	OK			
1189758001-C	HCL to pH < 2	OK			
1189758001-D	HCL to pH < 2	OK			
1189758001-E	HCL to pH < 2	OK			
1189758001-F	No Preservative Required	OK			
1189758001-G	No Preservative Required	OK			
1189758002-A	HCL to pH < 2	OK			
1189758002-B	HCL to pH < 2	OK			
1189758002-C	HCL to pH < 2	OK			
1189758002-D	HCL to pH < 2	OK			
1189758002-E	HCL to pH < 2	OK			
1189758003-A	HCL to pH < 2	OK			
1189758003-B	HCL to pH < 2	OK			
1189758003-C	HCL to pH < 2	OK			
1189758003-D	HCL to pH < 2	OK			
1189758003-E	HCL to pH < 2	OK			
1189758004-A	HCL to pH < 2	OK			
1189758004-B	HCL to pH < 2	OK			
1189758004-C	HCL to pH < 2	OK			
1189758004-D	HCL to pH < 2	OK			
1189758004-E	HCL to pH < 2	OK			
1189758005-A	HCL to pH < 2	OK			
1189758005-B	HCL to pH < 2	OK			
1189758005-C	HCL to pH < 2	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.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
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.

ATTACHMENT D

ADEC LABORATORY DATA REVIEW CHECKLISTS

Laboratory Data Review Checklist

Completed By:

Cacy Wilfer

Title:

Environmental Engineering Staff

Date:

October 9, 2018

CS Report Name:

Residence - 1066 Eliz Street HHOT

Report Date:

September 27, 2018

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1189757

ADEC File Number:

100.38.215

Hazard Identification Number:

4438

1189757

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ☑ Yes ☐ No 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 Comments:

   N/A; the samples were not transferred to another laboratory. Analysis was performed by SGS North America, Inc. in Anchorage, Alaska.

2. Chain of Custody (CoC)

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

   ☑ Yes ☐ No Comments:

   b. Correct Analyses requested?

   ☑ Yes ☐ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ☑ Yes ☐ No Comments:

   The sample receipt forms note the cooler temperature to be within temperature range.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ☑ Yes ☐ No Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ☑ Yes ☐ No Comments:

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

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

☐ Yes ☒ No Comments:

There were no discrepancies identified by the laboratory.

e. Data quality or usability affected?

Comments:

There was no effect on data quality or usability.

4. Case Narrative

a. Present and understandable?

☒ Yes ☐ No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

☒ Yes ☐ No Comments:

The case narrative notes that the AK101 surrogate recovery for 4-bromofluorobenzene in sample *SB18-02-02* did not meet QC criteria. The sample was analyzed twice and results were confirmed

The case narrative notes that AK101 and 8260C surrogate recovery for 4-bromofluorobenzene in sample *SB18-03-02* did not meet QC criteria due to matrix interference.

The case narrative notes that the SW8260C trip blank contained insufficient sample volume to perform analysis.

c. Were all corrective actions documented?

☐ Yes ☒ No Comments:

The laboratory does not note any corrective actions.

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

Comments:

The laboratory does not note any effect on data quality or usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

☒ Yes ☐ No Comments:

b. All applicable holding times met?

☑ Yes ☐ No Comments:

c. All soils reported on a dry weight basis?

☑ Yes ☐ No Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

☑ Yes ☐ No Comments:

Reporting limits were below ADEC cleanup levels for the requested analytes, for non-detect results, with the following exceptions. VOC analytes bromodichloromethane, dibromochloromethane, vinyl chloride, 1.2-dibromoethane, 1,2-dichloroethane 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane were not detected in the project sample and have reporting limits greater than ADEC cleanup levels. We cannot assess if the analytes are present in the sample at a concentration greater than the cleanup level but less than the reporting limit.

e. Data quality or usability affected?

☑ Yes ☐ No Comments:

We cannot assess if the analytes noted above are present in the sample at a concentration greater than the cleanup level but less than the reporting limit.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

☑ Yes ☐ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

☑ Yes ☐ No Comments:

GRO were detected at estimated concentrations below the LOQ in blanks 1476742 and 1477270.

iii. If above LOQ, what samples are affected?

Comments:

The associated project samples either had detections for GRO that were greater than ten times the method blank detection or did not have detections for this analyte.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes ☒ No Comments:

The associated project samples either had detections for GRO that were greater than ten times the method blank detection or did not have detections for this analyte.

v. Data quality or usability affected?

Comments:

No; 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 Comments:

LCS/LCSD samples were reported for GRO and DRO analyses.

LCS/LCSD and MS/MSD samples were reported for VOC, BTEX, and PAH analytes.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☐ Yes ☒ No Comments:

Only organic analyses were requested for this work order.

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 Comments:

The MS 1477561 and/or MSD 1477561 had high recovery failures for failures for hexachlorobutadiene and trichlorofluoromethane.

The MS 1478458 and/or MSD 1478459 had low recovery failures for o-xylene, p&m-xylenes, and total xylenes.

iv. Precision – All relative percent differences (RPD) 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 Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

The parent samples associated with the MS and MSD recovery failures are affected. However, the parent samples are not a part of the project sample set; the project samples are not affected by these QC failures.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes ☒ No Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

No; see above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☒ Yes ☐ No 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 Comments:

The GRO surrogate 4-bromofluorobenzene had high recoveries for samples *SB18-02-02* and *SB18-03-02*.

The VOC surrogate 4-bromofluorobenzene had a high recovery for sample *SB18-02-02*.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☒ Yes ☐ No Comments:

The detected GRO results for samples *SB18-02-02* and *SB18-03-02* are considered estimated, biased high, and are flagged 'JH*' in the analytical tables.

The requested BTEX analytes for sample *SB18-02-02* are not associated with the VOC surrogate 4-bromofluorobenzene. The reported results are not affected by the QC failure.

iv. Data quality or usability affected?

Comments:

Yes; see above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

☑ Yes ☐ No Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☑ Yes ☐ No Comments:

iii. All results less than LOQ?

☑ Yes ☐ No Comments:

iv. If above LOQ, what samples are affected?

Comments:

v. Data quality or usability affected?

Comments:

Data quality or usability was not affected; see above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☑ Yes ☐ No Comments:

ii. Submitted blind to lab?

☑ Yes ☐ No Comments:

Field-duplicate sample pair *SB18-01-02* / *SB18-101-02* was submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☑ Yes ☐ No Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was not affected; see above.

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

☐ Yes ☐ No ☑ Not Applicable

Samples for this project are not collected with reusable equipment, so the prospect of foreign contaminants being introduced through equipment contamination is not plausible.

i. All results less than LOQ?

☐ Yes ☐ No Comments:

N/A; an equipment blank was not submitted with this work order.

ii. If above LOQ, what samples are affected?

Comments:

N/A; an equipment blank was not submitted with this work order.

iii. Data quality or usability affected?

Comments:

The data quality and usability were not affected; see above.

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

a. Defined and appropriate?

☐ Yes ☑ No Comments:

There were no other data flags/qualifiers.

Laboratory Data Review Checklist

Completed By:

Sheila Hinckley

Title:

Environmental Scientist

Date:

September 26, 2018

CS Report Name:

Residence - 1066 Eliz Street HHOT

Report Date:

September 24, 2018

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1189758

ADEC File Number:

100.38.215

Hazard Identification Number:

4438

1189758

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ☑ Yes ☐ No 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 Comments:

   N/A; the samples were not transferred to another laboratory. Analysis was performed by SGS North America, Inc. in Anchorage, Alaska.

2. Chain of Custody (CoC)

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

   ☑ Yes ☐ No Comments:

   b. Correct Analyses requested?

   ☑ Yes ☐ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ☑ Yes ☐ No Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ☑ Yes ☐ No Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ☑ Yes ☐ No Comments:

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

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

☐ Yes ☒ No Comments:

There were no discrepancies identified by the laboratory.

e. Data quality or usability affected?

Comments:

There was no effect on data quality or usability.

4. Case Narrative

a. Present and understandable?

☒ Yes ☐ No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

☒ Yes ☐ No Comments:

The project sample *TWP18-01* had PAH surrogate recovery failures for 2-methylnaphthalene-d10 and fluoranthene-d10 due to matrix interference.

The project sample *TWP18-101* had a GRO surrogate recovery failure for 4- bromofluorobenzene due to matrix interference.

c. Were all corrective actions documented?

☐ Yes ☒ No Comments:

The laboratory does not note any corrective actions.

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

Comments:

The laboratory does not note any effect on data quality or usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

☒ Yes ☐ No Comments:

b. All applicable holding times met?

☑ Yes ☐ No Comments:

c. All soils reported on a dry weight basis?

☐ Yes ☑ No Comments:

N/A; soil samples were not submitted for this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

☑ Yes ☐ No Comments:

Reporting limits were below ADEC cleanup levels for the requested analytes, for non-detect results, with the following exceptions. VOC analyte 1,2,3-trichloropropane was not detected in the project sample *TWP18-01* but has a reporting limit greater than ADEC cleanup levels. We cannot assess if the analytes are present in the sample at a concentration greater than the cleanup level but less than the reporting limit.

e. Data quality or usability affected?

☑ Yes ☐ No Comments:

We cannot assess if the VOC analyte 1,2,3-trichloropropane is present in the sample *TWP18-01* at a concentration greater than the cleanup level but less than the reporting limit.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

☑ Yes ☐ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

☑ Yes ☐ No Comments:

iii. If above LOQ, what samples are affected?

Comments:

None; project analytes were not detected in the method blank samples.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes ☑ No Comments:

N/A; no samples are affected.

v. Data quality or usability affected?

Comments:

No; 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 Comments:

LCS/LCSD samples were reported for GRO, DRO, and PAH analyses.

LCS/LCSD and MS/MSD samples were reported for VOC analysis.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☐ Yes ☒ No Comments:

Only organic analyses were the only requested analyses for this work order.

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 Comments:

iv. Precision – All relative percent differences (RPD) 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 Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; analytical accuracy and precision were within laboratory acceptance criteria.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes ☒ No Comments:

Qualification of the data was not required; see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was not affected; see above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☒ Yes ☐ No 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 Comments:

The project sample *TWP18-01* had PAH surrogate recovery failures for 2-methylnaphthalene-d10 and fluoranthene-d10 due to matrix interference.

The project sample *TWP18-101* had a GRO surrogate recovery failure for 4- bromofluorobenzene due to matrix interference.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☒ Yes ☐ No Comments:

The GRO result for project sample *TWP18-101* is considered estimated, biased high, and is flagged 'JH*' in the analytical table.

The PAH results for project sample *TWP18-01* are considered estimated, biased low. Detected results are flagged 'JL*' and non-detect results are flagged 'J*' in the analytical tables.

iv. Data quality or usability affected?

Comments:

Yes; see above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

☒ Yes ☐ No Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☑ Yes ☐ No Comments:

iii. All results less than LOQ?

☑ Yes ☐ No Comments:

Project analytes were not detected in the trip blank sample.

iv. If above LOQ, what samples are affected?

Comments:

N/A; project analytes were not detected in the trip blank sample.

v. Data quality or usability affected?

Comments:

No; see above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☑ Yes ☐ No Comments:

ii. Submitted blind to lab?

☑ Yes ☐ No Comments:

Field-duplicate sample pair *TWP18-01* / *TWP18-101* was submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☑ Yes ☐ No Comments:

Field-duplicate RPDs were within the recommended DQO of 30% for water samples, where calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and usability was not affected; see above.

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

☐ Yes ☐ No ☒ Not Applicable

Samples for this project are not collected with reusable equipment, so the prospect of foreign contaminants being introduced through equipment contamination is not plausible.

i. All results less than LOQ?

☐ Yes ☐ No Comments:

N/A; an equipment blank was not submitted with this work order.

ii. If above LOQ, what samples are affected?

Comments:

N/A; an equipment blank was not submitted with this work order.

iii. Data quality or usability affected?

Comments:

The data quality and usability were not affected; see above.

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

a. Defined and appropriate?

☐ Yes ☒ No Comments:

There were no other data flags/qualifiers.

ATTACHMENT E

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 101607-005

Date: December 13, 2018

To: Mr. Timothy Woster
1066 Eliz Road, North Pole, AK. 99705

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