Groundwater Monitoring & Well Installation Report

Airport Way Professional Building
1406 Kellum Street, Fairbanks, Alaska

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Prepared for:

Airport Way Professional Building LLC

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INTRODUCTION

This report was prepared on behalf of Airport Way Professional Building LLC, who has contracted with Alaska Resources & Environmental Services (ARES) to perform the groundwater monitoring well installation and groundwater investigation associated with the known UST release that occurred on the subject property. The ADEC file number for the site is 102.38.143. The work was conducted as detailed in the ADEC approved Corrective Action Work Plan submitted in August 2016.

SITE BACKGROUND

Site Description

The Airport Way Professional Building parcel (subject property) is situated on an approximate 1-acre site located north of Airport Way at 1406 Kellum Street, Fairbanks, Alaska (Figure 1). The site is located in the U.S. Geological Survey (USGS) Fairbanks D-2 quadrangle. The legal description for the property is as follows: Tax Lots 2, 3, 4, & 8 Block 137, Weeks Field Subdivision.

History

ARES was authorized in July 2007 to perform a Site Characterization associated with the removal of two UST's located on the subject property. Tank #1 consisted of a 1,000-gallon UST and Tank # 2 consisted of a 300-gallon UST. Both tanks where used for the storage of # 2 diesel fuel for the purpose of heating structures located on the property.

While conducting the Site Assessment during removal and close-out of Tank # 2, petroleum contaminated soils were encountered. Soils had a strong diesel odor, however, soils were not saturated and exhibited characteristics typical of older releases.

During excavation and removal of the 300-gallon UST (Tank # 2) approximately 80 cubic yards (77 tons) of petroleum-contaminated soils were excavated and transported to OIT for treatment by thermal remediation. The remainder of the excavated contaminated soils (approximately 216 yds^3) was stockpiled on-site and land farmed in accordance with ADEC approved Work Plan. DRO was detected at a concentration of 1080 mg/kg in the analytical soil samples collected from the soil water interface of the 300-gallon tank excavation. The ADEC cleanup level for DRO in soil is 250 mg/kg. Analytical soil samples collected from the sidewalls and end walls of the 300-gallon UST site were found to be below ADEC target cleanup levels, for all tested analytes.

Per agreement with ADEC, as a condition to close out the site, a groundwater monitoring well (MW-1) was installed hydraulically down gradient from the source area. Groundwater samples were collected from MW-1 on June 15, 2009, and analyzed for BTEX by EPA method 8260B and DRO by method AK 102. Analytical results indicate that benzene was detected at a concentration of 82.8 ug/L which exceeds ADEC target cleanup levels in groundwater. The ADEC groundwater cleanup level for benzene at the time of analysis was 5 ug/L. The ADEC human health groundwater cleanup level for

benzene is currently 4.6 ug/L. Detected concentrations of Toluene, ethylbenzene, xylenes, and DRO (non-detect) were below ADEC groundwater cleanup levels.

Based on a groundwater sample results from MW-1, ARES recommended two additional monitoring wells be installed to determine if contaminants were migrating onto the property from an off-site source or if the contaminants were originating from the subject property. The two monitoring wells were installed on June 25, 2009. Monitoring well MW-2 was installed in the source area at the location of the former 300-gallon UST and monitoring well MW-3 was installed hydraulically up gradient on the east property boundary in order to determine the up-gradient conditions.

Analytical results detected concentrations of DRO (6.44 mg/L) in groundwater in source area MW-2 that exceed ADEC groundwater cleanup levels. The cleanup level for DRO in groundwater is 1.5 mg/L. Analytical results confirm that the groundwater collected from MW-2 was below ADEC cleanup levels for all other tested analytes.

In 2009, during the construction of the Airport Way Professional Building, the groundwater monitoring wells were inadvertently paved over with asphalt. ARES was unsuccessful in locating the wells upon a site visit conducted in July 2016.

Topography

The United States Geological Survey (USGS) Fairbanks Quadrangle (D-2) provides topographic map coverage of the site (Figure 1). Fairbanks is located in the northern part of the Tanana Basin, which is a relatively flat floodplain of the Tanana River. The subject property is situated approximately 2.5 miles north of the Tanana River and 0.5 miles south of the Chena River. Based upon the topographic map of the Fairbanks Quadrangle, the site elevation is approximately 446 feet above the mean sea level.

Regional Hydrology

The Tanana River is the dominant influence on ground-water flow in the subject area. Two discharge peaks characterize the Tanana River: spring snowmelt runoff and late summer precipitation. The stage of nearby water bodies, including the Chena River, typically rise and fall in response to stage changes of the Tanana River. The depth to groundwater varies in response to these controlling factors. Based on interpretation of USGS data, regional groundwater flow direction is generally to the west-southwest. However, the direction of flow can vary depending upon the stage of the Tanana River.

The Airport Way Professional Building is located approximately 0.42 miles south of the Chena River and 2.64 miles north of the Tanana River.

Scope of Work

To achieve the stated objectives, ARES performed the following tasks:

- Reinstalled three permanent groundwater monitoring wells. The wells were installed by the Drilling Company. The wells were installed using a truck mounted drill rig with a 6” hollow-stem auger.

- Collected analytical soil samples. Soil samples were retrieved using a Geoprobe 6610DT truck-mounted direct push drill unit. Each sample core was extracted using a new, clean polyethylene sample tube. Soil characterization included the collection of PID field screen measurements, and analytical samples from the soil borings. Soil samples were analyzed for, diesel range organics (DRO) by method AK 102, benzene, toluene, ethylbenzene and total xylenes (BTEX) by method EPA 8021B. Soils from the source area well were also analyzed for poly-aromatic hydrocarbons (PAH) by method EPA 8270D. Continuous soil sample borings were completed from the surface to 6"-18" below the soil water interface (SWI) at the location of each well installation.
- Developed groundwater monitoring wells and collected analytical groundwater samples according to the *ADEC Monitoring Well Guidance* September 2013 and 11 AAC 93.140, Alaska Department of Natural Resources, Water Wells. Groundwater samples were analyzed for gasoline range organics (GRO) by method AK101, benzene, toluene, ethylbenzene and total xylenes (BTEX) by method EPA 8021B, and diesel range organics (DRO) by method AK 102.
- Used groundwater data to determine if contaminants are present in groundwater above ADEC cleanup levels and if contaminants are migrating from the source area;
- Completed a closed loop groundwater elevation survey to determine the groundwater flow direction; and
- Documented field activities and prepared Final Report.

SOIL SAMPLING

Field Screen Soil Sampling

Field screen soil samples were analyzed by PID using the headspace method. ARES used a MiniRAE 3000 PID. The PID was used for headspace screening of samples in accordance with ADEC field screening procedures. The PID was calibrated prior to each period of use to 0 parts per million (ppm) free air and 100 ppm isobutylene calibration gas, using a response factor of 10. A soil field screen sample was collected at each 2' interval from the ground surface to the soil water interface.

Headspace screening was conducted as follows: Soil samples were transferred directly into a Ziploc bags. Each bag was filled one-third to one half full, then warmed for 15 to 20 minutes. Temperatures of the soil in the bag were then warmed to at least 16ºC (60 ºF). Samples were agitated at the beginning and end of the warming period inside the bag to enhance volatilization. The bags were partially opened after the warming and the VOCs in the headspace above the soil were sampled by inserting the PID probe. The highest meter reading obtained was recorded. Soils collected for field screen samples were not used for collection of analytical samples.

In-Situ Soil Sampling (Subsurface)

Soil borings were installed by The Drilling Company. Soil samples were retrieved using a Geoprobe 6610DT truck-mounted direct push drill unit. Sampling was performed using a MC5 Macrocore sampling system. Sample cores were 48-in long and approximately

1.5-in in diameter. Each sample core was extracted using a new, clean polyethelene sample tube to prevent any opportunity for cross-contamination with the sample. Due gravels collapsing within the bottom of the borehore, the final interval of MW-2 was collected with a split spoon sampling device.

The soil sample retrieval process consisted of continuous sampling from the ground surface to 6"-18" below the soil water interface (SWI). Groundwater was encountered at 10.5-11.5'bgs.

In continuous sampling, the Macrocore sample barrel is started at the surface and driven into the sample interval in 4-ft sections. The first sample was driven from 0- to 4 ft bgs. Then the sample barrel was brought to the surface. The PVC liner with the soil sample was removed and cut open to access the soil. Soil field screen samples were collected from the core and assessed every 2' from top of the initial boring to the soil water interface. One analytical sample was collected from area most likely to show contamination (the interval with the highest PID field screen result within the borehole) and one analytical soil sample was collected from 6" above the soil water interface from each borehole. Groundwater monitoring well locations are shown in Figure 3, Appendix A.

A total of eighteen (18) field screen samples were collected September 20-21, 2016. Field screen results and soil profiles for each interval sampled for each well borehole are located in Table 1.

Table 1: Field Screen Measurements Summary

Well Borehole	Depth (ft bgs)	PID Value (ppm)	Soil Description/Classification
MW-1	0-2	0.0	Sandy gravel/GW
	2-4	0.0	Brown, silty loam / OL
	4-6	0.0	Silty loam and sand / OL
	6-8	0.1	Sand / SW
	8-10	0.0	Sand with occasional round gravels / SP
	10-12	0.0	Sand with occasional round gravels / SP
MW-2	0-2	0.3	Sandy gravels / GW
	2-4	0.2	Sandy gravels / GW
	4-6	0.4	Sandy gravels / GW
	6-8	0.0	Sandy gravels / GW
	8-10	0.0	Sandy gravels / GW
	10-12	0.1	Sand / SW
MW-3	0-2	0.0	Sandy gravels / GW
	2-4	0.1	Silty, fine sand /SM
	4-6	0.2	Silty, fine sand /SM
	6-8	0.2	Fine sand / SW
	8-10	0.0	Fine sand / SW
	10-12	0.0	Sand / SW

Sample results greater than 20ppm are **highlighted and bold.**

Analytical Results

A total of four (4) soil analytical samples (including one blind field duplicate) were collected on September 20-21, 2016.

Analytical soil samples were collected directly from the disposable polyethylene liners. Soil samples were collected in the order of volatility and analyzed as follows:

- BTEX compounds (benzene, toluene, ethyl-benzene, and total xylenes) by method EPA 8021B;
- Gasoline Range Organics (GRO) by AK Method 101;
- Diesel Range Organics (DRO) by AK Method 102; and
- Polycyclic Aromatic Hydrocarbons (PAH) by EPA Method 8270D. Two PAH samples (including one blind field duplicate) were collected from the source area well, MW-2.

Analytical soil samples include 10% blind field duplicate samples for QA/QC purposes. A summary of analytical soil samples is located in Table 2 and Table 3. Complete lab results are included in Appendix C and Appendix D.

Table 2: Summary of Petroleum Analytical Results in Soil

Sample ID	Monitoring Well	Depth in feet bgs	EPA Method 8021B				Alaska Method AK 101	Alaska Method AK 102
			Benzene in mg/kg	Toluene in mg/kg	Ethyl-benzene in mg/kg	Total xylenes in mg/kg	GRO in mg/kg	DRO in mg/kg
AWPB-916-01	MW-3	10-12	ND [0.00622]	ND [0.0121]	ND [0.0121]	ND [0.0354]	ND [1.17]	*
AWPB-916-02	MW-1	9.5-11	ND [0.00536]	ND [0.0104]	ND [0.0104]	ND [0.0305]	ND [1.00]	*
AWPB-916-03	MW-2	10-11.5	ND [0.00593]	ND [0.0116]	ND [0.0116]	0.0733 J	1.15 J	9.15 J
AWPB-916-04[1]	MW-2	10-11.5	ND [0.00535]	0.00959 J	ND [0.0104]	ND [0.0305]	ND [1.00]	7.96 J
ADEC Cleanup Level [1]			0.022	6.7	0.13	1.5	300	250

Title 18 of the Alaska Administrative Code, Chapter 75. Section 341. Table B1, B2 Method 2. Most stringent level listed for under 40" zone. Revised as of July, 2017.
"*"-Analysis not performed/Not requested on the COC in error
[1]=AWPB-916-04 is a blind field duplicate to AWP-916-03
J - Sample detected above MDL but below MRL. Reported concentration is considered an estimate.
ND-Analyte not detected above the MDL
Results above ADEC Regulatory Limit in **Bold**.

Table 1: Summary of PAH Analytical Results [EPA8270D SIM] in Soil

Compound	AWPB-916-03 in mg/kg	AWPB-916-04[2] in mg/kg	ADEC Cleanup Level [1] in mg/kg
Acenaphthene	ND [0.00183]	ND [0.00181]	37
Acenaphthylene	ND [0.00183]	ND [0.00181]	18
Anthracene	ND [0.00183]	ND [0.00181]	390
Benzo (a) anthracene	ND [0.00183]	ND [0.00181]	0.28
Benzo (a) pyrene	ND [0.00183]	ND [0.00181]	0.27
Benzo (b) fluoranthene	ND [0.00183]	ND [0.00181]	2.7
Benzo (ghi) perylene	ND [0.00183]	ND [0.00181]	2300
Benzo (k) fluoranthene	ND [0.00183]	ND [0.00181]	20
Chrysene	ND [0.00183]	ND [0.00181]	82
Dibenzo (a,h) anthracene	ND [0.00183]	ND [0.00181]	0.20
Fluoranthene	ND [0.00183]	ND [0.00181]	590
Fluorene	ND [0.00183]	ND [0.00181]	36
Indeno (1,2,3-cd) pyrene	ND [0.00183]	ND [0.00181]	2.0
Naphthalene	ND [0.00183]	ND [0.00181]	0.038
Phenanthrene	ND [0.00183]	ND [0.00181]	39
Pyrene	ND [0.00183]	ND [0.00181]	87
1-Methylnapthalene	ND [0.00183]	ND [0.00181]	0.41
2-Methylnaphthalene	ND [0.00183]	ND [0.00181]	1.3
Sample Depth (in ft bgs)	10-11.5	10-11.5	

[1]Title 18 of the Alaska Administrative Code, Chapter 75. Section 341. Table B1 Method 2. Most stringent level listed for under 40" zone. Revised as of July 2017.
Results above ADEC Regulatory Limit in **Bold**.
J - Sample detected above MDL but below MRL. Reported concentration is considered an estimate.
[2]=Blind field duplicate sample to AWPB-916-03

GROUNDWATER MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Installation

A total of three (3) permanent groundwater monitoring wells were installed on the subject site on September 20-21, 2016. Monitoring well locations are shown in Figure 3 Appendix A.

Groundwater monitoring wells were installed using 2-inch schedule 40-PVC well screens and risers. Well screens are 0.010 slot in screen size and come in 10-ft lengths. Wells were installed by truck mounted drill rig utilizing a 6" hollow stem auger. Well screens were centered approximately at the soil / groundwater interface. Silica sand was used to secure the well screen and was added to the boring hole upon placement of the well screen and casing. Silica sand was added to a height of 2 vertical feet above the well

screen. A total of three vertical feet of hydrated bentonite clay was added on top of the sand. The remainder of the boring was filled with sand.

A steel flush-mount monument was installed over the well casing and secured with a concrete base. Wells were capped and locked after installation.

Monitoring well design characteristics for monitoring wells are as follows:

Material = 2" diameter Schedule 40 PVC pipe
Well screen = 10-foot long, 2-inch O.D. Schedule 40 PVC well screen with 0.010-slot
Filter Pack =10/20 Colorado silica sand
Annular seal- hydrated bentonite chips sand layer
Well Monument = 8" metal flush mount monuments surrounded with concrete

Well depth was generally 17-18' bgs for all wells.

A closed loop groundwater elevation survey was completed following installation of the new groundwater monitoring wells.

Closed Circuit Loop Groundwater Survey

A closed-circuit loop groundwater survey was conducted using monitoring wells MW-1, MW-2 and MW-3 for the purpose of determining the groundwater flow direction and hydraulic gradient. Information from the well survey is summarized in Table 4 below.

Table 4: Well Survey Information

Well Number	Survey Date	Water Depth (ft)	Casing Depth (ft)	Well Volume (gallons)
MW-1	09/30/2016	11.23	16.55	0.87
MW-2	09/30/2016	11.01	17.60	1.08
MW-3	09/30/2016	10.62	16.59	0.98

According to the calculated groundwater direction and gradient (Figure 4) the direction of groundwater flow in the area is N 32^{o} W. The computed gradient is: 0.00062 vertical ft./horizontal ft.

Monitoring Well Development

Groundwater monitoring wells were developed following well construction / installation and setup of the concrete for the well monument. Wells were surged with surge block, and then purged with a peristaltic pump. The cycle of surging and purging repeated until purge water remained clear with no sediment remaining in the purge water. Groundwater monitoring wells were developed on September 30, 2016 and sampled on October 14, 2016.

Groundwater Monitoring Well Sampling and Analysis (General Procedure)

Wells were sampled in order of least likely to be contaminated to most likely. New Nitrile gloves were used for the sampling of each well.

Sample parameters were collected in the following order:

- Well measurements (water/casing depth, presence of NAPL);
- Water parameters (Temp, pH, conductivity, dissolved oxygen, ORP, and salinity);
- Volatile Organic Compounds (BTEX/GRO); and
- Semi-volatiles organic compounds (DRO).

Prior to initiating sampling procedures, a Herron SM.OIL Oil water interface probe was used to check for the presence of NAPL in each well. NAPL was not detected in any of the groundwater monitoring wells.

Water and casing depth measurements were collected using a Solinst Model 101 P2 Water depth meter. Groundwater depth was measured and recorded before, during, and after sampling. The depth of the well casing was also recorded.

Groundwater was purged and sampled using low-flow techniques. Water quality parameters were obtained using a flow-through-cell and a YSI Multi Parameter Water Meter Model 566 SN: 15H100848. For low-flow sampling, the goal is minimum drawdown (<0.3 feet) during purging. The water level was measured at each timed interval that the water quality parameters are measured and recorded on the field log. Water quality parameters and water level measurements were collected and recorded every three minutes. The measured flow rate was 0.3 L/min during purging and sampling. The maximum draw down of all wells during purging was 0.01'.

The following water quality parameters are considered stable when three successive readings, collected 3-5 minutes apart, are within:

- ± 3% for temperature (minimum of ± 0.2°C);
- ± 0.1 for pH;
- ± 3% for conductivity;
- ± 10 mv for redox potential;
- ± 10% for dissolved oxygen (DO); and
- ± 10% for turbidity.

Once the groundwater parameters stabilized, samples were collected in order of decreasing volatility using a peristaltic pump and new disposable polyethylene tubing. The tubing was carefully lowered in to the well to avoid loss of volatiles and water collected from the tubing was placed directly into lab supplied sample bottles. Volatile samples were collected to avoid any headspace in the bottle. All bottles were labeled and placed in a pre-chilled cooler (at approximately 4°C) and submitted to ADEC approved laboratory following chain of custody (COC) procedures.

Monitoring wells were capped and locked after use.

Groundwater samples were analyzed as follows:

- BTEX compounds by EPA Method 8021B;
- Gasoline Range Organics (GRO) by Method AK 101; and
- Diesel Range Organics (DRO) by Method AK 102.

Purge water collected during the sampling event was placed into individually labeled 5-gallon buckets with lids. The buckets were labeled "1406 Kellum Street MW Sampling/Well #" and were temporarily stored off-site until status of water quality could be determined. Upon receipt of sample results, purge water and investigative waste water determined to be above ADEC groundwater cleanup levels were transported to OIT Inc., for disposal/processing.

Field Observations

Soil borings and well installation occurred on September 20, 2016 – September 21, 2016. Groundwater monitoring wells were developed on September 30, 2016 and sampled on October 14, 2016 and August 15, 2017.

During the 2016 groundwater sampling event, no odor or color was observed in the groundwater purged from the monitoring wells with the exception of MW-1 and MW-3, which both exhibited a cloudy, light yellow color.

During the 2017 groundwater sampling event, no odor or color was observed in the groundwater purged from the monitoring wells with the exception of MW-2 which exhibited a slight fuel odor.

Analytical Results

All three monitoring wells were sampled and analyzed for BTEX by EPA method 8021B or 8260C, GRO by method AK101, and DRO by method AK102. Groundwater analytical results are summarized in Table 5. Complete laboratory results are included in Appendix C and Appendix D.

Table 2: Summary of Petroleum Analytical Results in Groundwater

Sample Location	Sample ID	Date Sampled	EPA Method 8021B or 8260C				Alaska Method AK 101	Alaska Method AK 102
			Benzene in µg/L	Toluene in µg/L	Ethyl-benzene in µg/L	Total xylenes in µg/L	GRO in µg/L	DRO in µg/L
MW-1	MW1-1016	10/14/2016	ND [0.150]	ND [0.310]	ND [0.310]	0.44 J	38.9J	ND [183]
	MW1-817	08/15/2017	ND [0.093]	ND [0.31]	ND [0.20]	ND [0.44]	ND [120]	ND [81]
MW-2	MW2-1016	10/14/2016	ND [0.150]	ND [0.310]	ND [0.310]	ND [0.930]	ND [31.0]	**1950**
	DUP-1016 Blind field duplicate sample to MW2-1016	10/14/2016	ND [0.150]	ND [0.310]	ND [0.310]	ND [0.930]	ND [31.0]	1450
	MW2-817	08/15/2017	ND [0.093]	ND [0.31]	ND [0.20]	ND [0.44]	ND [120]	400
	DUP-817 Blind field duplicate sample to MW2-817	08/15/2017	ND [0.093]	ND [0.31]	ND [0.20]	ND [0.44]	ND [120]	410
MW-3	MW3-1016	10/14/2016	ND [0.150]	ND [0.310]	ND [0.310]	ND [0.930]	ND [31.0]	269 J
	MW3-817	08/15/2017	ND [0.093]	ND [0.31]	ND [0.20]	ND [0.44]	ND [120]	190 J
ADEC Cleanup Level [1]			4.6	1100	15	190	2200	1500

[1] Title 18 of the Alaska Administrative Code, Chapter 75. Section 345. Table C. Revised as of July, 2017.
ND - Not detected above reporting limit.
J - Sample detected above MDL but below MRL. Reported concentration is considered an estimate.
Results above ADEC Regulatory Limit in **Bold**.
NA - Not Analyzed.

QUALITY ASSURANCE AND QUALITY CONTROL

Blind Duplicate Samples

Field quality control (QC) procedures for this project included the collection and analysis of three blind field duplicate samples. One blind field duplicate soil sample was collected and two blind field duplicate water samples were collected. The blind field duplicate samples were analyzed for the same compounds as the original samples. The QC samples were analyzed to assess the quality of sample collection and handling, as well as the accuracy and precision of the laboratory's analytical procedures.

RPD calculations provide a comparison of two theoretically identical samples that are submitted blind to the laboratory in order to provide an un-biased measure of precision. Due to the nature of the RPD calculation, sample data for both samples must be reported in order for the RPD calculation to provide meaningful data. The RPDs are shown in Table 5 and Table 6 below for all analytes with calculable RPDs.

Table 6: Relative Percent Difference Calculations in Soil

Sample ID / Duplicate ID	Compound	Sample Concentration (mg/kg)	Duplicate Concentration (mg/kg)	RPD (Limit < 50%)
AWPB-916-03 / AWPB-916-04	DRO	9.15	7.96	13.9 %

Given two sample concentrations (X and Y) the formula to determine RPD is the absolute value of the following:
[(X - Y) /((X + Y))/ 2)] * 100 = RPD
Results above ADEC recommended range in **Bold**.

Table 7: Relative Percent Difference Calculations in Water

Sample ID / Duplicate ID	Compound	Sample Concentration (µg/L)	Duplicate Concentration (µg/L)	RPD (Limit < 30%)
MW2-1016 / DUP-1016	DRO	1950	1450	29.4 %
MW2-817 / DUP-817	DRO	400	410	2.5 %

Given two sample concentrations (X and Y) the formula to determine RPD is the absolute value of the following:
[(X - Y) /((X + Y))/ 2)] * 100 = RPD
Results above ADEC recommended range in **Bold**.

The ADEC recommended RPD limit for duplicate soil samples is <50%. The ADEC recommended RPD limit for water analysis is < 30%. The blind field duplicate RPD calculations fell within the ADEC recommended range for all of the calculated RPD values. No impact to data quality or usability is expected for all analytes based upon the blind field duplicate RPD calculations.

Trip Blank Samples

Field quality control (QC) procedures for this project included the analysis of two water trip blank samples and one soil trip blank sample which accompanied the samples in the field. The trip blank samples were analyzed to assess the quality of sample collection and handling.

In ideal conditions the analysis of a trip blank sample should not indicate the presence of any of the tested analytes in a quantity above the method reporting limit (MRL). A result above the MRL can indicate that cross-contamination occurred between samples during sample transport or analysis, or indicate laboratory contamination.

The two of trip blank samples for this project were analyzed for BTEX compounds by method EPA 8021B and GRO by AK 101. One of the trip blank samples was analyzed for BTEX compounds by method EPA 8260C and GRO by AK 101. No compounds were detected above the MRL in the soil trip blank samples or the water trip blank sample.

In the SGS laboratory report 1168740, o-xylene was detected in the trip blank above the MDL and below the reporting limit. There is no evidence of cross-contamination between samples because o-xylene was not detected in three of the four samples. No impact on data quality and usability is expected.

In the SGS laboratory report 1168617, toluene was detected in the trip blank above the MDL and below one half the reporting limit. There is no evidence of cross-contamination between samples. No impact on data quality and usability is expected.

There is no indication that cross-contamination between samples occurred.

Data Quality Data Review

The ADEC Environmental Laboratory Data Quality Assurance Requirements (ADEC 2009) and United States Environmental Protection Agency (EPA) National Functional Guidelines for Organic Superfund Data Review (EPA 2017) were followed in this site investigation. The data was reviewed to determine the data quality and to evaluate potential impact on the usability of the data. The review was performed using Level II reports that were provided by TestAmerica Laboratories, Inc. in Spokane, WA and SGS North America, Inc. in Anchorage, AK. The analytical laboratory reports, chain-of-custody records, and ADEC Lab Quality Checklists are included in Appendix C and Appendix D.

The following quality control parameters were reviewed:

- Holding times
- Sample handling and receiving
- Surrogate percent recovery
- Field duplicate sample comparability
- Matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD)
- Laboratory control sample (LCS)/Laboratory control sample duplicate (LCSD) percent recoveries and RPD
- Method blanks
- Trip blanks
- Method Sensitivity – reporting limits and limit of quantitation (LOQ)

The quality control parameters for TestAmerica Laboratory Report 590-6861-1 were found to be within accepted limits.

The quality control parameters for SGS North America laboratory reports 1168617 and 1168740 were found to be within accepted limits with the following exceptions:

<u>Laboratory Report 1168740</u>

- O-xylene was detected in the trip blank above the MDL and below one half the reporting limit. There is no evidence of cross-contamination because toluene was not detected in three of the four samples No impact on data quality and usability is expected.
- Surrogate recovery for method AK 102 in the LCS for 5a androstane (125%) exceed acceptable recovery limits. Data quality and usability are not affected. Surrogate recoveries for the associated samples were within control limits.
- Surrogate recoveries for method AK 102 in the LCSD for 5a androstane (124%) and n-triacontane (121 %) exceed acceptable recovery limits. Data quality and usability are not affected. Surrogate recoveries for the associated samples were within control limits.

Laboratory Report 1169617

- Toluene was detected in the trip blank above the MDL and below one half the reporting limit. There is no evidence of cross-contamination. No impact on data quality and usability is expected.

No impact on data quality and usability is expected for the samples from reports 590-6861-1 and 1168617. The data quality for toluene results may be affected in report 1168740; the data remains usable and should be viewed qualitatively not quantitatively. No impact is expected on data quality and usability for all other analytes.

- The ADEC lab quality checklist for soil is included in Appendix C.
- The ADEC lab quality checklists for groundwater are included in Appendix D.

CONCLUSIONS AND RECOMMENDATIONS

Soil analytical results from all boreholes were non-detect for Benzene, Toluene and Ethylbenzene. Soil analytical results from boreholes MW-1 and MW-3 were also non-detect for Xylenes, GRO and DRO. DRO was detected at concentrations below ADEC cleanup levels in soils collected from MW-2. The highest level of DRO detected (9.15 mg/kg) was from borehole MW-2 at 10'-11.5'bgs. Soil analytical results from MW-2 also detected concentrations below ADEC cleanup levels for Xylenes (0.0733 mg/kg) and GRO (1.15 mg/kg). Based on analytical results, the soils collected from each borehole are below ADEC cleanup levels for DRO and BTEX compounds in soil at all monitoring well installation locations.

Groundwater analytical results for all three wells from the October 14, 2016 sampling event were all non-detect or below ADEC cleanup levels for all analytes tested, with the exception of MW-2 (sample ID MW2-1016). DRO was detected in groundwater collected from MW-2 at concentration of 1950µg/L which exceeds the ADEC human health groundwater cleanup level for DRO (1500µg/L). Analytical results indicate that all collected groundwater samples are below ADEC cleanup levels for GRO and BTEX compounds.

Groundwater analytical results for all three wells from the August 15, 2017 sampling event were all non-detect or below ADEC cleanup levels for all analytes tested, with the exception of MW-2 (sample ID MW2-1017). DRO was detected in groundwater collected from MW-2, at concentration of 400µg/L, which is less than the ADEC human health groundwater cleanup level for DRO (1500µg/L). Analytical results indicate that all collected groundwater samples are below ADEC cleanup levels for DRO, GRO, and BTEX compounds.

Analytical results from the October 14, 2016 sampling event indicate that groundwater from the source area well MW-2 contained concentrations of DRO that exceeded ADEC cleanup levels. DRO was not detected in the up gradient monitoring well MW-1. DRO was detected in the down gradient well at concentrations less than the MRL and significantly below ADEC cleanup levels.

Analytical results from the August 15, 2017 sampling event confirm that DRO concentrations in the groundwater collected from source area MW-2 have decreased to below ADEC cleanup levels. Concentrations of DRO detected in groundwater from the down gradient MW-3 have also decreased and remain significantly below ADEC cleanup levels.

A comparison of the analytical results from both sampling events suggests that the contaminated groundwater plume is moving down gradient but natural attenuation is occurring and the concentration of contaminants in the plume is decreasing.

ARES recommends the following:

- ARES recommends one (1) additional annual groundwater monitoring well sampling event to verify that the concentration of DRO in the groundwater continues on a decreasing trend. Analytical samples should be collected during period of high water table conditions and analyzed for GRO, DRO, and BTEX;
- Due to presence of known soil contamination at the site, ARES recommends institutional controls for the site to include a requirement for field screen sampling for POLs and segregation of POL contaminated soils should excavation occur in the vicinity of the source area at the site in the future (road reconstruction, installation of cable utilities etc.).

Limitations

This report presents the analytical results from a limited number of soil and groundwater samples and should not be construed as a comprehensive study of groundwater quality at the site. The samples were intended to evaluate the presence or absence of contaminants at the locations selected. Detectable levels of petroleum hydrocarbons may be present at other locations. It was also not the intent of our sampling and testing to detect the presence of groundwater affected by contaminants other than those for which laboratory analysis were preformed. No conclusions can be drawn on the presence or absence of other contaminants. This is not a geotechnical study.

The data presented in this report should be considered representative of the time of our site observations and sample collection. Changes in site conditions can occur with time because of natural forces or human activity. ARES reserves the right to modify or alter conclusions and recommendations should additional data become available.

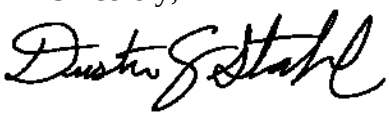
This report was prepared for the exclusive use of Airport Way Professional Building, LLC and their representatives. If it is made available to others, it should be for information on factual data only and not as a warranty of subsurface conditions.

Qualifications & Signature of Environmental Professional

Dustin Stahl is an ADEC 'Qualified Environmental Professional' and has extensive field experience as an environmental project manager and has worked on all aspects of environmental assessments, investigations, and clean-up efforts.

Project Manager/Geologist

Sincerely,



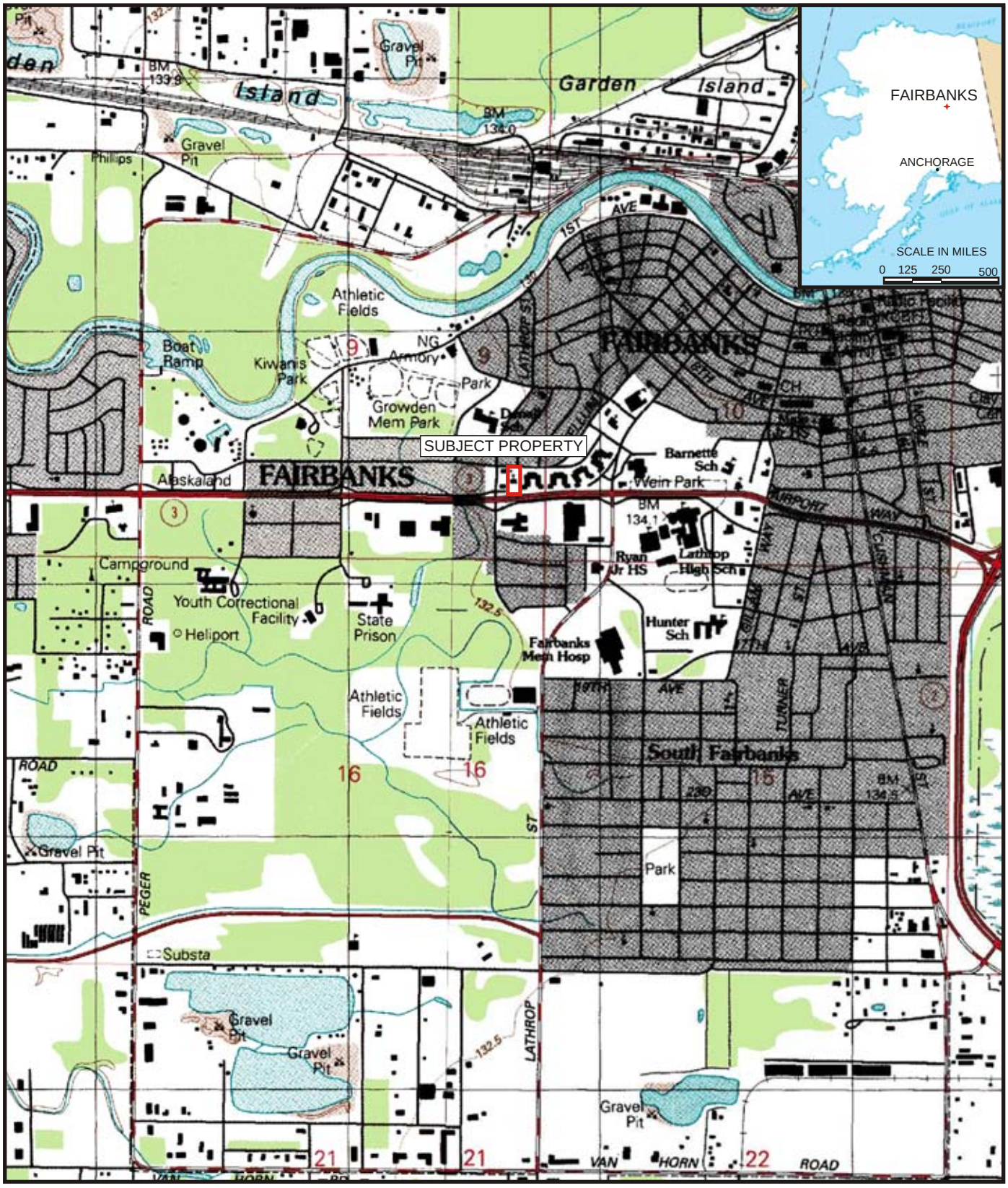
Dustin Stahl
Alaska Resources and Environmental Services, LLC

Enclosure:

Appendix A – Figures
Appendix B – Photos
Appendix C – Analytical Soil Laboratory Results and ADEC Lab Quality Checklist
Appendix D – Analytical Water Laboratory Results and ADEC Lab Quality Checklist
Appendix E – Boring Logs
Appendix F – Field Notes and Field Data Sheets

Appendix A

Figures



1992 TOPOGRAPHICAL MAP FAIRBANKS, AK QUAD D-2	DATE: 08/08/2016	SCALE IN MILES: 0 ¼ ½		**ALASKA RESOURCES AND ENVIRONMENTAL SERVICES, LLC** **PO BOX 83050** **FAIRBANKS, AK 99708** **PH. (907) 374-3226** **FAX (907) 374-3219**	
	DRAWN: JDG				FIGURE 1
	PROJECT: GROUNDWATER MONITORING WELL INSTALLATION WORKPLAN AIRPORT WAY PROFESSIONAL BUILDING 1406 KELLUM STREET, FAIRBANKS, AK		N W E S		

AERIAL PHOTOGRAPH SEPTEMBER 2015	DATE: 08/08/2016 DRAWN: JDG	SCALE IN FEET: 0 25 50 75 100	**ALASKA RESOURCES AND ENVIRONMENTAL SERVICES, LLC** **PO BOX 83050** **FAIRBANKS, AK 99708** **PH. (907) 374-3226** **FAX (907) 374-3219**	FIGURE 2
	PROJECT: GROUNDWATER MONITORING WELL INSTALLATION WORKPLAN AIRPORT WAY PROFESSIONAL BUILDING 1406 KELLUM STREET, FAIRBANKS, AK	N W E S		

WELL AND ANALYTICAL SAMPLE LOCATION MAP	DATE: 12/20/2017	SCALE IN FEET: 0 10 20 30 40 50	ALASKA RESOURCES AND ENVIRONMENTAL SERVICES, LLC PO BOX 83050 FAIRBANKS, AK 99708 PH. (907) 374-3226 FAX (907) 374-3219	FIGURE 3
	DRAWN: DJS			
	PROJECT: GROUNDWATER MONITORING WELL INSTALLATION WORKPLAN AIRPORT WAY PROFESSIONAL BUILDING 1406 KELLUM STREET, FAIRBANKS, AK	N W E S		

WELL LOCATION MAP and GROUNDWATER FLOW DIRECTION	DATE: 08/08/2016	SCALE IN FEET: 0 10 20 30 40 50	ALASKA RESOURCES AND ENVIRONMENTAL SERVICES, LLC PO BOX 83050 FAIRBANKS, AK 99708 PH. (907) 374-3226 FAX (907) 374-3219	FIGURE 4
	DRAWN: JDG			
	PROJECT: GROUNDWATER MONITORING WELL INSTALLATION WORKPLAN AIRPORT WAY PROFESSIONAL BUILDING 1406 KELLUM STREET, FAIRBANKS, AK	N W E S		

Appendix B

Photos

Photograph 1: Viewed Northeast- The Drilling Company drilling/installing Monitoring Well, MW-3.

Photograph 2: Viewed Northeast-MW-3 and 0-4' soil profile.

Photograph 3: Viewed Northeast- MW-3 and 4-8' soil profile.

Photograph 4: Viewed Northeast- MW-3, 8-12' soil profile. Location and depth of soil sample AWPB-916-01.

Photograph 5: Viewed North- The Drilling Company drilling/installing Monitoring Well, MW-1.

Photograph 6: Viewed South-MW-1 and 0-4' soil profile.

Airport Way Professional Building Well Installation
1406 Kellum Street, Fairbanks, AK

Photographs 1-6

Alaska Resources and Environmental Services, LLC
284 Topside Fairbanks, AK 99701

PH. (907) 374-3226
FAX (907) 374-3219

Photograph 7: Viewed South- MW-1 and 8-12' soil profile. Location and depth of soil sample AWPB-916-02.

Photograph 8: Viewed East-MW-2 and 0-4' soil profile.

Photograph 9: Viewed East-MW-2 and 4-8' soil profile.

Photograph 10: Viewed South-The Drilling Company drilling/installing Monitoring Well, MW-2.

Photograph 11: View of MW-2, 8-10' soil profile.

Photograph 12: View of MW-2 and 10-12' soil profile. Location and depth of soil samples AWPB-916-03 and AWPB-916-04.

Airport Way Professional Building Well Installation
1406 Kellum Street, Fairbanks, AK

Photographs 7-12

Alaska Resources and Environmental Services, LLC
284 Topside Fairbanks, AK 99701

PH. (907) 374-3226
FAX (907) 374-3219

Appendix C

Analytical Soil Results

&

ADEC Lab Quality Checklist

Laboratory Report of Analysis

To: Alaska Resources and Env. Svcs
P.O. Box 83050
Fairbanks, AK 99708

Report Number: **1168617**

Client Project: **Airportway Professional Bld**

Dear Lyle Gresehover,

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.

_____

Jennifer Dawkins Date
Project Manager

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: **Alaska Resources and Env. Svcs**
SGS Project: **1168617**
Project Name/Site: **Airportway Professional Bld**
Project Contact: **Lyle Gresehover**

Refer to sample receipt form for information on sample condition.

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

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

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) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 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
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
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
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
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.

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

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
AWPB-916-01	1168617001	09/20/2016	09/23/2016	Soil/Solid (dry weight)
AWPB-916-02	1168617002	09/20/2016	09/23/2016	Soil/Solid (dry weight)
AWPB-916-03	1168617003	09/21/2016	09/23/2016	Soil/Solid (dry weight)
AWPB-916-04	1168617004	09/21/2016	09/23/2016	Soil/Solid (dry weight)
Trip Blank	1168617005	09/20/2016	09/23/2016	Soil/Solid (dry weight)

Method	Method Description
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK101	AK101/8021 Combo. (S)
SW8021B	AK101/8021 Combo. (S)
AK102	Diesel Range Organics (S)
SM21 2540G	Percent Solids SM2540G

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

Detectable Results Summary

Client Sample ID: **AWPB-916-03**
Lab Sample ID: 1168617003
Semivolatile Organic Fuels
Volatile Fuels

Parameter	Result	Units
Diesel Range Organics	9.15J	mg/Kg
Gasoline Range Organics	1.15J	mg/Kg
o-Xylene	18.1J	ug/Kg
P & M -Xylene	55.2J	ug/Kg

Client Sample ID: **AWPB-916-04**
Lab Sample ID: 1168617004
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	7.96J	mg/Kg

Client Sample ID: **Trip Blank**
Lab Sample ID: 1168617005
Volatile Fuels

Parameter	Result	Units
Toluene	9.59J	ug/Kg

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

Results of **AWPB-916-01**

Client Sample ID: **AWPB-916-01**
Client Project ID: **Airportway Professional Bld**
Lab Sample ID: 1168617001
Lab Project ID: 1168617

Collection Date: 09/20/16 09:40
Received Date: 09/23/16 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):79.6
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.95	U	3.89	1.17	mg/Kg	1		10/02/16 04:55
Surrogates								
4-Bromofluorobenzene (surr)	103		50-150		%	1		10/02/16 04:55

Batch Information

Analytical Batch: VFC13343
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/02/16 04:55
Container ID: 1168617001-B

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 09/20/16 09:40
Prep Initial Wt./Vol.: 60.191 g
Prep Extract Vol: 37.27 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	9.70	U	19.4	6.22	ug/Kg	1		10/02/16 04:55
Ethylbenzene	19.4	U	38.9	12.1	ug/Kg	1		10/02/16 04:55
o-Xylene	19.4	U	38.9	12.1	ug/Kg	1		10/02/16 04:55
P & M -Xylene	38.9	U	77.8	23.3	ug/Kg	1		10/02/16 04:55
Toluene	19.4	U	38.9	12.1	ug/Kg	1		10/02/16 04:55
Surrogates								
1,4-Difluorobenzene (surr)	93.1		72-119		%	1		10/02/16 04:55

Batch Information

Analytical Batch: VFC13343
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/02/16 04:55
Container ID: 1168617001-B

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 09/20/16 09:40
Prep Initial Wt./Vol.: 60.191 g
Prep Extract Vol: 37.27 mL

Print Date: 10/10/2016 4:54:58PM

J flagging is activated

Results of **AWPB-916-02**

Client Sample ID: **AWPB-916-02**
Client Project ID: **Airportway Professional Bld**
Lab Sample ID: 1168617002
Lab Project ID: 1168617

Collection Date: 09/20/16 13:50
Received Date: 09/23/16 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):87.4
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.68	U	3.35	1.00	mg/Kg	1		10/02/16 05:13
Surrogates								
4-Bromofluorobenzene (surr)	93.6		50-150		%	1		10/02/16 05:13

Batch Information

Analytical Batch: VFC13343
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/02/16 05:13
Container ID: 1168617002-B

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 09/20/16 13:50
Prep Initial Wt./Vol.: 54.464 g
Prep Extract Vol: 31.8735 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	8.35	U	16.7	5.36	ug/Kg	1		10/02/16 05:13
Ethylbenzene	16.8	U	33.5	10.4	ug/Kg	1		10/02/16 05:13
o-Xylene	16.8	U	33.5	10.4	ug/Kg	1		10/02/16 05:13
P & M -Xylene	33.5	U	67.0	20.1	ug/Kg	1		10/02/16 05:13
Toluene	16.8	U	33.5	10.4	ug/Kg	1		10/02/16 05:13
Surrogates								
1,4-Difluorobenzene (surr)	91		72-119		%	1		10/02/16 05:13

Batch Information

Analytical Batch: VFC13343
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/02/16 05:13
Container ID: 1168617002-B

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 09/20/16 13:50
Prep Initial Wt./Vol.: 54.464 g
Prep Extract Vol: 31.8735 mL

Print Date: 10/10/2016 4:54:58PM

J flagging is activated

Results of **AWPB-916-03**

Client Sample ID: **AWPB-916-03**
Client Project ID: **Airportway Professional Bld**
Lab Sample ID: 1168617003
Lab Project ID: 1168617

Collection Date: 09/21/16 09:50
Received Date: 09/23/16 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):81.2
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
2-Methylnaphthalene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Acenaphthene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Acenaphthylene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Anthracene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Benzo(a)Anthracene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Benzo[a]pyrene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Benzo[b]Fluoranthene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Benzo[g,h,i]perylene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Benzo[k]fluoranthene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Chrysene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Dibenzo[a,h]anthracene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Fluoranthene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Fluorene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Indeno[1,2,3-c,d] pyrene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Naphthalene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Phenanthrene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Pyrene	3.04	U	6.09	1.83	ug/Kg	1		10/08/16 01:31
Surrogates								
2-Fluorobiphenyl (surr)	99.9		46-115		%	1		10/08/16 01:31
Terphenyl-d14 (surr)	99.7		58-133		%	1		10/08/16 01:31

Batch Information

Analytical Batch: XMS9678
Analytical Method: 8270D SIM (PAH)
Analyst: BRV
Analytical Date/Time: 10/08/16 01:31
Container ID: 1168617003-A

Prep Batch: XXX36402
Prep Method: SW3550C
Prep Date/Time: 09/27/16 20:37
Prep Initial Wt./Vol.: 22.735 g
Prep Extract Vol: 1 mL

Print Date: 10/10/2016 4:54:58PM

J flagging is activated

Results of **AWPB-916-03**

Client Sample ID: **AWPB-916-03**
Client Project ID: **Airportway Professional Bld**
Lab Sample ID: 1168617003
Lab Project ID: 1168617

Collection Date: 09/21/16 09:50
Received Date: 09/23/16 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):81.2
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	9.15	J	24.5	7.61	mg/Kg	1		09/30/16 04:01
Surrogates								
5a Androstane (surr)	110		50-150		%	1		09/30/16 04:01

Batch Information

Analytical Batch: XFC12898
Analytical Method: AK102
Analyst: NRO
Analytical Date/Time: 09/30/16 04:01
Container ID: 1168617003-A

Prep Batch: XXX36401
Prep Method: SW3550C
Prep Date/Time: 09/27/16 19:12
Prep Initial Wt./Vol.: 30.111 g
Prep Extract Vol: 1 mL

Results of **AWPB-916-03**

Client Sample ID: **AWPB-916-03**
Client Project ID: **Airportway Professional Bld**
Lab Sample ID: 1168617003
Lab Project ID: 1168617

Collection Date: 09/21/16 09:50
Received Date: 09/23/16 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):81.2
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.15 J		3.70	1.11	mg/Kg	1		10/02/16 08:57
Surrogates								
4-Bromofluorobenzene (surr)	96.2		50-150		%	1		10/02/16 08:57

Batch Information

Analytical Batch: VFC13343
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/02/16 08:57
Container ID: 1168617003-B

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 09/21/16 09:50
Prep Initial Wt./Vol.: 60.505 g
Prep Extract Vol: 36.3821 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	9.25 U		18.5	5.93	ug/Kg	1		10/02/16 08:57
Ethylbenzene	18.5 U		37.0	11.6	ug/Kg	1		10/02/16 08:57
o-Xylene	18.1 J		37.0	11.6	ug/Kg	1		10/02/16 08:57
P & M -Xylene	55.2 J		74.1	22.2	ug/Kg	1		10/02/16 08:57
Toluene	18.5 U		37.0	11.6	ug/Kg	1		10/02/16 08:57
Surrogates								
1,4-Difluorobenzene (surr)	93.5		72-119		%	1		10/02/16 08:57

Batch Information

Analytical Batch: VFC13343
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/02/16 08:57
Container ID: 1168617003-B

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 09/21/16 09:50
Prep Initial Wt./Vol.: 60.505 g
Prep Extract Vol: 36.3821 mL

Print Date: 10/10/2016 4:54:58PM

J flagging is activated

Results of **AWPB-916-04**

Client Sample ID: **AWPB-916-04**
Client Project ID: **Airportway Professional Bld**
Lab Sample ID: 1168617004
Lab Project ID: 1168617

Collection Date: 09/21/16 10:00
Received Date: 09/23/16 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):82.0
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
2-Methylnaphthalene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Acenaphthene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Acenaphthylene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Anthracene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Benzo(a)Anthracene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Benzo[a]pyrene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Benzo[b]Fluoranthene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Benzo[g,h,i]perylene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Benzo[k]fluoranthene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Chrysene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Dibenzo[a,h]anthracene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Fluoranthene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Fluorene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Indeno[1,2,3-c,d] pyrene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Naphthalene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Phenanthrene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Pyrene	3.01	U	6.02	1.81	ug/Kg	1		10/08/16 01:54
Surrogates								
2-Fluorobiphenyl (surr)	99.6		46-115		%	1		10/08/16 01:54
Terphenyl-d14 (surr)	99.7		58-133		%	1		10/08/16 01:54

Batch Information

Analytical Batch: XMS9678
Analytical Method: 8270D SIM (PAH)
Analyst: BRV
Analytical Date/Time: 10/08/16 01:54
Container ID: 1168617004-A

Prep Batch: XXX36402
Prep Method: SW3550C
Prep Date/Time: 09/27/16 20:37
Prep Initial Wt./Vol.: 22.783 g
Prep Extract Vol: 1 mL

Print Date: 10/10/2016 4:54:58PM

J flagging is activated

Results of **AWPB-916-04**

Client Sample ID: **AWPB-916-04**
Client Project ID: **Airportway Professional Bld**
Lab Sample ID: 1168617004
Lab Project ID: 1168617

Collection Date: 09/21/16 10:00
Received Date: 09/23/16 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):82.0
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	7.96	J	24.2	7.51	mg/Kg	1		09/30/16 04:11
Surrogates								
5a Androstane (surr)	109		50-150		%	1		09/30/16 04:11

Batch Information

Analytical Batch: XFC12898
Analytical Method: AK102
Analyst: NRO
Analytical Date/Time: 09/30/16 04:11
Container ID: 1168617004-A

Prep Batch: XXX36401
Prep Method: SW3550C
Prep Date/Time: 09/27/16 19:12
Prep Initial Wt./Vol.: 30.191 g
Prep Extract Vol: 1 mL

Print Date: 10/10/2016 4:54:58PM

J flagging is activated

Results of **AWPB-916-04**

Client Sample ID: **AWPB-916-04**
Client Project ID: **Airportway Professional Bld**
Lab Sample ID: 1168617004
Lab Project ID: 1168617

Collection Date: 09/21/16 10:00
Received Date: 09/23/16 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):82.0
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.68	U	3.35	1.00	mg/Kg	1		10/02/16 09:16
Surrogates								
4-Bromofluorobenzene (surr)	91.1		50-150		%	1		10/02/16 09:16

Batch Information

Analytical Batch: VFC13343
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/02/16 09:16
Container ID: 1168617004-B

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 09/21/16 10:00
Prep Initial Wt./Vol.: 67.817 g
Prep Extract Vol: 37.2084 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	8.35	U	16.7	5.35	ug/Kg	1		10/02/16 09:16
Ethylbenzene	16.8	U	33.5	10.4	ug/Kg	1		10/02/16 09:16
o-Xylene	16.8	U	33.5	10.4	ug/Kg	1		10/02/16 09:16
P & M -Xylene	33.5	U	66.9	20.1	ug/Kg	1		10/02/16 09:16
Toluene	16.8	U	33.5	10.4	ug/Kg	1		10/02/16 09:16
Surrogates								
1,4-Difluorobenzene (surr)	92.5		72-119		%	1		10/02/16 09:16

Batch Information

Analytical Batch: VFC13343
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/02/16 09:16
Container ID: 1168617004-B

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 09/21/16 10:00
Prep Initial Wt./Vol.: 67.817 g
Prep Extract Vol: 37.2084 mL

Print Date: 10/10/2016 4:54:58PM

J flagging is activated

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **Airportway Professional Bld**
Lab Sample ID: 1168617005
Lab Project ID: 1168617

Collection Date: 09/20/16 09:40
Received Date: 09/23/16 09:15
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	1.29	U	2.59	0.777	mg/Kg	1		10/02/16 02:44
Surrogates								
4-Bromofluorobenzene (surr)	99.9		50-150		%	1		10/02/16 02:44

Batch Information

Analytical Batch: VFC13343
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/02/16 02:44
Container ID: 1168617005-A

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 09/20/16 09:40
Prep Initial Wt./Vol.: 48.25 g
Prep Extract Vol: 25 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	6.50	U	13.0	4.15	ug/Kg	1		10/02/16 02:44
Ethylbenzene	12.9	U	25.9	8.08	ug/Kg	1		10/02/16 02:44
o-Xylene	12.9	U	25.9	8.08	ug/Kg	1		10/02/16 02:44
P & M -Xylene	25.9	U	51.8	15.5	ug/Kg	1		10/02/16 02:44
Toluene	9.59	J	25.9	8.08	ug/Kg	1		10/02/16 02:44
Surrogates								
1,4-Difluorobenzene (surr)	90.4		72-119		%	1		10/02/16 02:44

Batch Information

Analytical Batch: VFC13343
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/02/16 02:44
Container ID: 1168617005-A

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 09/20/16 09:40
Prep Initial Wt./Vol.: 48.25 g
Prep Extract Vol: 25 mL

Print Date: 10/10/2016 4:54:58PM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1744170 [SPT/10008]
Blank Lab ID: 1355003

Matrix: Soil/Solid (dry weight)

QC for Samples:
1168617001, 1168617002, 1168617003, 1168617004

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT10008
Analytical Method: SM21 2540G
Instrument:
Analyst: IAS
Analytical Date/Time: 9/27/2016 5:46:00PM

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Duplicate Sample Summary

Original Sample ID: 1165705001
Duplicate Sample ID: 1355005
QC for Samples:

Analysis Date: 09/27/2016 17:46
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	98.6	98.5	%	0.08	(< 15)

Batch Information

Analytical Batch: SPT10008
Analytical Method: SM21 2540G
Instrument:
Analyst: IAS

Print Date: 10/10/2016 4:55:01PM

Duplicate Sample Summary

Original Sample ID: 1168609031
Duplicate Sample ID: 1355006
QC for Samples:
1168617001, 1168617002

Analysis Date: 09/27/2016 17:46
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	74.5	75.0	%	0.72	(< 15)

Batch Information

Analytical Batch: SPT10008
Analytical Method: SM21 2540G
Instrument:
Analyst: IAS

Print Date: 10/10/2016 4:55:01PM

Duplicate Sample Summary

Original Sample ID: 1168617002
Duplicate Sample ID: 1355007
QC for Samples:
1168617001, 1168617002, 1168617003, 1168617004

Analysis Date: 09/27/2016 17:46
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	87.4	88.2	%	0.97	(< 15)

Batch Information

Analytical Batch: SPT10008
Analytical Method: SM21 2540G
Instrument:
Analyst: IAS

Print Date: 10/10/2016 4:55:01PM

Method Blank

Blank ID: MB for HBN 1744385 [VXX/29680]
Blank Lab ID: 1355904

Matrix: Soil/Solid (dry weight)

QC for Samples:
1168617001, 1168617002, 1168617003, 1168617004, 1168617005

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.913J	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	102	50-150		%

Batch Information

Analytical Batch: VFC13343
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/2/2016 2:07:00AM

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 10/1/2016 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1168617 [VXX29680]
Blank Spike Lab ID: 1355907
Date Analyzed: 10/02/2016 01:11

Spike Duplicate ID: LCSD for HBN 1168617 [VXX29680]
Spike Duplicate Lab ID: 1355908
Matrix: Soil/Solid (dry weight)

QC for Samples: 1168617001, 1168617002, 1168617003, 1168617004, 1168617005

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	13.3	107	12.5	12.3	98	(60-120)	8.30	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	111	111	1.25	104	104	(50-150)	6.70	

Batch Information

Analytical Batch: **VFC13343**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX29680**
Prep Method: **SW5035A**
Prep Date/Time: **10/01/2016 00:30**
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 1744385 [VXX/29680]
Blank Lab ID: 1355904

Matrix: Soil/Solid (dry weight)

QC for Samples:
1168617001, 1168617002, 1168617003, 1168617004, 1168617005

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	6.25U	12.5	4.00	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
Surrogates				
1,4-Difluorobenzene (surr)	94.7	72-119		%

Batch Information

Analytical Batch: VFC13343
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/2/2016 2:07:00AM

Prep Batch: VXX29680
Prep Method: SW5035A
Prep Date/Time: 10/1/2016 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1168617 [VXX29680]
Blank Spike Lab ID: 1355905
Date Analyzed: 10/02/2016 00:34

Spike Duplicate ID: LCSD for HBN 1168617 [VXX29680]
Spike Duplicate Lab ID: 1355906
Matrix: Soil/Solid (dry weight)

QC for Samples: 1168617001, 1168617002, 1168617003, 1168617004, 1168617005

Results by **SW8021B**

	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	1250	1450	116	1250	1320	105	(75-125)	9.80	(< 20)
Ethylbenzene	1250	1330	106	1250	1180	94	(75-125)	11.80	(< 20)
o-Xylene	1250	1310	105	1250	1170	94	(75-125)	11.20	(< 20)
P & M -Xylene	2500	2700	108	2500	2390	96	(80-125)	12.10	(< 20)
Toluene	1250	1320	105	1250	1160	93	(70-125)	12.50	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	1250	93.7	94	1250	94.4	94	(72-119)	0.77	

Batch Information

Analytical Batch: **VFC13343**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX29680**
Prep Method: **SW5035A**
Prep Date/Time: **10/01/2016 00:30**
Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

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Matrix Spike Summary

Original Sample ID: 1165718002
MS Sample ID: 1355909 MS
MSD Sample ID: 1355910 MSD

Analysis Date: 10/02/2016 3:03
Analysis Date: 10/02/2016 3:22
Analysis Date: 10/02/2016 3:40
Matrix: Soil/Solid (dry weight)

QC for Samples: 1168617001, 1168617002, 1168617003, 1168617004, 1168617005

Results by **SW8021B**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	5.55U	988	1081	109	988	1081	109	75-125	0.11	(< 20)
Ethylbenzene	10.2J	988	993	99	988	977	98	75-125	1.60	(< 20)
o-Xylene	112	988	1081	98	988	1045	94	75-125	3.20	(< 20)
P & M -Xylene	104	1973	2046	98	1973	1994	96	80-125	2.50	(< 20)
Toluene	10.9J	988	991	99	988	1000	100	70-125	0.99	(< 20)
Surrogates										
1,4-Difluorobenzene (surr)		988	917	93	988	884	90	72-119	3.70	

Batch Information

Analytical Batch: VFC13343
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/2/2016 3:22:00AM

Prep Batch: VXX29680
Prep Method: AK101 Extraction (S)
Prep Date/Time: 10/1/2016 12:30:00AM
Prep Initial Wt./Vol.: 66.36g
Prep Extract Vol: 25.00mL

Print Date: 10/10/2016 4:55:06PM

Method Blank

Blank ID: MB for HBN 1744157 [XXX/36401]
Blank Lab ID: 1354915

Matrix: Soil/Solid (dry weight)

QC for Samples:
1168617003, 1168617004

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	90.5	60-120		%

Batch Information

Analytical Batch: XFC12898
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: NRO
Analytical Date/Time: 9/30/2016 1:55:00AM

Prep Batch: XXX36401
Prep Method: SW3550C
Prep Date/Time: 9/27/2016 7:12:36PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1168617 [XXX36401]
Blank Spike Lab ID: 1354916
Date Analyzed: 09/30/2016 02:05

Spike Duplicate ID: LCSD for HBN 1168617 [XXX36401]
Spike Duplicate Lab ID: 1354917
Matrix: Soil/Solid (dry weight)

QC for Samples: 1168617003, 1168617004

Results by **AK102**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	167	143	86	167	134	81	(75-125)	6.20	(< 20)
Surrogates									
5a Androstane (surr)	3.33	104	104	3.33	99.8	100	(60-120)	4.10	

Batch Information

Analytical Batch: **XFC12898**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **NRO**

Prep Batch: **XXX36401**
Prep Method: **SW3550C**
Prep Date/Time: **09/27/2016 19:12**
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1744158 [XXX/36402]
Blank Lab ID: 1354918

Matrix: Soil/Solid (dry weight)

QC for Samples:
1168617003, 1168617004

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

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	2.50U	5.00	1.50	ug/Kg
2-Methylnaphthalene	2.50U	5.00	1.50	ug/Kg
Acenaphthene	2.50U	5.00	1.50	ug/Kg
Acenaphthylene	2.50U	5.00	1.50	ug/Kg
Anthracene	2.50U	5.00	1.50	ug/Kg
Benzo(a)Anthracene	2.50U	5.00	1.50	ug/Kg
Benzo[a]pyrene	2.50U	5.00	1.50	ug/Kg
Benzo[b]Fluoranthene	2.50U	5.00	1.50	ug/Kg
Benzo[g,h,i]perylene	2.50U	5.00	1.50	ug/Kg
Benzo[k]fluoranthene	2.50U	5.00	1.50	ug/Kg
Chrysene	2.50U	5.00	1.50	ug/Kg
Dibenzo[a,h]anthracene	2.50U	5.00	1.50	ug/Kg
Fluoranthene	2.50U	5.00	1.50	ug/Kg
Fluorene	2.50U	5.00	1.50	ug/Kg
Indeno[1,2,3-c,d] pyrene	2.50U	5.00	1.50	ug/Kg
Naphthalene	2.50U	5.00	1.50	ug/Kg
Phenanthrene	2.50U	5.00	1.50	ug/Kg
Pyrene	2.50U	5.00	1.50	ug/Kg
Surrogates				
2-Fluorobiphenyl (surr)	102	46-115		%
Terphenyl-d14 (surr)	97.8	58-133		%

Batch Information

Analytical Batch: XMS9678
Analytical Method: 8270D SIM (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: BRV
Analytical Date/Time: 10/7/2016 6:48:00PM

Prep Batch: XXX36402
Prep Method: SW3550C
Prep Date/Time: 9/27/2016 8:37:09PM
Prep Initial Wt./Vol.: 22.5 g
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1168617 [XXX36402]
Blank Spike Lab ID: 1354919
Date Analyzed: 10/07/2016 19:10

Matrix: Soil/Solid (dry weight)

QC for Samples: 1168617003, 1168617004

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

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	22.2	20.3	91	(43-111)
2-Methylnaphthalene	22.2	19.6	88	(39-114)
Acenaphthene	22.2	23.9	108	(44-111)
Acenaphthylene	22.2	20.9	94	(39-116)
Anthracene	22.2	19.2	87	(50-114)
Benzo(a)Anthracene	22.2	22.2	100	(54-122)
Benzo[a]pyrene	22.2	20.4	92	(50-125)
Benzo[b]Fluoranthene	22.2	21.4	97	(53-128)
Benzo[g,h,i]perylene	22.2	19.8	89	(49-127)
Benzo[k]fluoranthene	22.2	18.9	85	(56-123)
Chrysene	22.2	19.5	88	(57-118)
Dibenzo[a,h]anthracene	22.2	19.9	90	(50-129)
Fluoranthene	22.2	19.4	87	(55-119)
Fluorene	22.2	21.8	98	(47-114)
Indeno[1,2,3-c,d] pyrene	22.2	20.5	92	(49-130)
Naphthalene	22.2	17.7	80	(38-111)
Phenanthrene	22.2	25.1	113	(49-113)
Pyrene	22.2	20.5	92	(55-117)
Surrogates				
2-Fluorobiphenyl (surr)	22.2	107	107	(46-115)
Terphenyl-d14 (surr)	22.2	99.9	100	(58-133)

Batch Information

Analytical Batch: **XMS9678**
Analytical Method: **8270D SIM (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **BRV**

Prep Batch: **XXX36402**
Prep Method: **SW3550C**
Prep Date/Time: **09/27/2016 20:37**
Spike Init Wt./Vol.: 22.2 ug/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: Extract Vol:

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

Matrix Spike Summary

Original Sample ID: 1168617004
MS Sample ID: 1354920 MS
MSD Sample ID: 1354921 MSD

Analysis Date: 10/08/2016 1:54
Analysis Date: 10/08/2016 2:16
Analysis Date: 10/08/2016 2:38
Matrix: Soil/Solid (dry weight)

QC for Samples: 1168617003, 1168617004

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

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	3.01U	26.8	23.4	88	26.6	24.6	93	43-111	4.90	(< 20)
2-Methylnaphthalene	3.01U	26.8	23.8	88	26.6	23.5	89	39-114	0.63	(< 20)
Acenaphthene	3.01U	26.8	28.0	104	26.6	27.4	103	44-111	2.30	(< 20)
Acenaphthylene	3.01U	26.8	24.8	92	26.6	24.1	91	39-116	2.60	(< 20)
Anthracene	3.01U	26.8	23.7	88	26.6	24.3	91	50-114	2.70	(< 20)
Benzo(a)Anthracene	3.01U	26.8	25.5	95	26.6	25.7	97	54-122	0.99	(< 20)
Benzo[a]pyrene	3.01U	26.8	25.4	95	26.6	26.1	98	50-125	2.90	(< 20)
Benzo[b]Fluoranthene	3.01U	26.8	24.0	90	26.6	24.6	92	53-128	2.30	(< 20)
Benzo[g,h,i]perylene	3.01U	26.8	20.2	76	26.6	20.4	77	49-127	0.29	(< 20)
Benzo[k]fluoranthene	3.01U	26.8	20.7	78	26.6	21.3	80	56-123	2.80	(< 20)
Chrysene	3.01U	26.8	22.4	84	26.6	22.8	86	57-118	1.70	(< 20)
Dibenzo[a,h]anthracene	3.01U	26.8	20.6	77	26.6	20.4	76	50-129	1.40	(< 20)
Fluoranthene	3.01U	26.8	22.6	84	26.6	22.8	86	55-119	1.00	(< 20)
Fluorene	3.01U	26.8	25.5	95	26.6	25.1	95	47-114	1.30	(< 20)
Indeno[1,2,3-c,d] pyrene	3.01U	26.8	20.5	76	26.6	20.5	77	49-130	0.08	(< 20)
Naphthalene	3.01U	26.8	21.0	78	26.6	20.6	77	38-111	2.10	(< 20)
Phenanthrene	3.01U	26.8	29.5	110	26.6	28.9	108	49-113	2.30	(< 20)
Pyrene	3.01U	26.8	24.0	89	26.6	24.0	90	55-117	0.33	(< 20)
Surrogates										
2-Fluorobiphenyl (surr)		26.8	28.2	105	26.6	27.6	104	46-115	1.80	
Terphenyl-d14 (surr)		26.8	26.1	97	26.6	26.6	100	58-133	1.60	

Batch Information

Analytical Batch: XMS9678
Analytical Method: 8270D SIM (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: BRV
Analytical Date/Time: 10/8/2016 2:16:00AM

Prep Batch: XXX36402
Prep Method: Sonication Extraction Soil 8270 PAH SIM
Prep Date/Time: 9/27/2016 8:37:09PM
Prep Initial Wt./Vol.: 22.72g
Prep Extract Vol: 1.00mL

Print Date: 10/10/2016 4:55:11PM

SGS

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CHAIN (

1168617

Locations Nationwide

Alaska, New Jersey, North Carolina, West Virgina, Maryland, New York, Indiana, Kentucky

www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out.
Omissions may delay the onset of analysis.

Page 1 of 1

Section 1

CLIENT: ALASKA RESOURCES + ENVIRONMENTAL SERVICES

CONTACT: Lyle Gresehover PHONE NO: 907 388 8032

PROJECT NAME: AIRPORT WAY PROFESSIONAL BLD PROJECT/ PWSID/ PERMIT#:

REPORTS TO: DUSTIN/LYLE E-MAIL: dustin@ak-res.com lyle@ak-res.com

INVOICE TO: Lyle Gresehover QUOTE #: P.O. #:

Section 2 / Section 3

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	BTEX/GRO 8021B (METH)	DRO AK 102 (N/A)	PAH 8270SIM (N/A)							REMARKS/ LOC ID
① A-B	AWPB-916-01	9/20/16	940	S	2	G	X									
② A-B	AWPB-916-02	9/20/16	1350	S	2	G	X									
③ A-B	AWPB-916-03	9/21/16	0950	S	2	G	X	X	X							
④ A-B	AWPB-916-04	9/21/16	1000	S	2	G	X	X	X							
⑤ A	TRIP BLANK						X									

Section 5

Relinquished By:	Date	Time	Received By:
(1) [signature]	9/21/16	1640	[signature] 9/21/16 1640
(2) [signature]	9/22/16	1500	[signature]
(3)			
(4)	9/23/16	9:15	Received For Laboratory By: [signature]

Section 4 DOD Project? Yes (No)

Data Deliverable Requirements:

Cooler ID:

Requested Turnaround Time and/or Special Instructions:

Temp Blank °C: 5.6

or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)

INTACT BROKEN (ABSENT) NO

(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms-and-conditions

1F 18
AC 4.7 06

F083-Kit_Request_and_COC_Templates-Blank
Revised 2013-03-24

SGS

1168617

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 @ 5.0 w/Therm. ID: 236 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 #: 334646

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

SGS

e-SAMPLE RECEIPT FORM

1168617

Review Criteria	Y/N (yes/no)	Exceptions Noted below
		exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Y	1F, 1B
COC accompanied samples?	Y	
**exemption permitted if chilled & collected <8hrs ago or chlling not required (i.e., waste, oil)		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Y	Cooler ID: 1 @ 1.7 °C Therm ID: D6
		Cooler ID: @ °C Therm ID:
		Cooler ID: @ °C Therm ID:
		Cooler ID: @ °C Therm ID:
		Cooler ID: @ °C Therm ID:
*If >6°C, were samples collected <8 hours ago?		
If <0°C, were sample containers ice free?		
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.		
		Note: Refer to form F-083 "Sample Guide" for hold times.
Were samples received within hold time?	Y	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	Y	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous?	Y	
		***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	Y	
IF APPLICABLE		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Y	
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		
Were all soil VOAs field extracted with MeOH+BFB?	Y	

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
1168617001-A	No Preservative Required	OK			
1168617001-B	Methanol field pres. 4 C	OK			
1168617002-A	No Preservative Required	OK			
1168617002-B	Methanol field pres. 4 C	OK			
1168617003-A	No Preservative Required	OK			
1168617003-B	Methanol field pres. 4 C	OK			
1168617004-A	No Preservative Required	OK			
1168617004-B	Methanol field pres. 4 C	OK			
1168617005-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.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Laboratory Data Review Checklist

Completed By:

Alyson McPhetres

Title:

Environmental Specialist/ EIT

Date:

November 2017

CS Report Name:

Groundwater Monitoring & Well Installation Report: Airport Way Professional Building

Consultant Firm:

Alaska Resources and Environmental Services, LLC

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1168617

ADEC File Number:

102.38.143

Hazard Identification Number:

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:

The sample was not transferred or sub-contracted to another laboratory.

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:

No adverse conditions were noted.

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:

No discrepancies were noted.

e. Data quality or usability affected?

○ Yes ◉ No

Comments:

The data quality and usability are not affected.

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No

Comments:

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

◉ Yes ○ No

Comments:

c. Were all corrective actions documented?

◉ Yes ○ No

Comments:

No corrective actions were necessary.

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

◉ Yes ○ No

Comments:

The case narrative does not discuss the impact 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:

e. Data quality or usability affected?

(•) Yes ( ) No

Comments:

The data quality and usability are not affected.

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:

No samples are affected.

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

(•) Yes ( ) No

Comments:

No samples are affected.

v. Data quality or usability affected?

Comments:

The data quality and usability are not affected.

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:

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

(•) Yes ( ) No

Comments:

No analyses for metals/inorganics were performed.

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:

No samples are affected.

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

(•) Yes ( ) No

Comments:

No samples are affected.

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

Comments:

The data quality and usability are not affected.

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:

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

(●) Yes ( ) No

Comments:

No samples are affected.

iv. Data quality or usability affected?

Comments:

The data quality and usability are not affected.

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:

The samples were all transported in the same cooler.

iii. All results less than LOQ?

(●) Yes ( ) No

Comments:

Toluene was detected in the trip blank above the MDL and below one half the reporting limit. There is no evidence of cross-contamination because toluene was not detected in three of the four samples. No impact on data quality and usability is expected.

iv. If above LOQ, what samples are affected?

( ) Yes (●) No

Comments:

No samples are affected.

v. Data quality or usability affected?

Comments:

The data quality and usability are not affected.

e. Field Duplicate

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

(●) Yes ( ) No

Comments:

Sample AWPB-916-04 is the blind field duplicate of sample AWPB-916-03.

ii. Submitted blind to lab?

◉ Yes ○ No

Comments:

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:

The RPD for DRO is 13.9%. The remaining analytes were undetected in either one or both of the samples.

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

Comments:

The data quality and usability are not affected.

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

○ Yes ○ No ◉ Not Applicable

Comments:

No decontamination or equipment blank was required in the work plan.

i. All results less than LOQ?

◉ Yes ○ No

Comments:

No decontamination or equipment blank was required in the work plan.

ii. If above LOQ, what samples are affected?

Comments:

No decontamination or equipment blank was required in the work plan.

iii. Data quality or usability affected?

Comments:

No decontamination or equipment blank was required in the work plan.

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

a. Defined and appropriate?

(•) Yes ( ) No

Comments:

Appendix D

Analytical Water Results
&
ADEC Lab Quality Checklist

Laboratory Report of Analysis

To: Alaska Resources and Env. Svcs
P.O. Box 83050
Fairbanks, AK 99708

Report Number: **1168740**

Client Project: **AirportWayProfessionalBuilding**

Dear Lyle Gresehover,

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.

_____

Jennifer Dawkins Date
Project Manager

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: **Alaska Resources and Env. Svcs**
SGS Project: **1168740**
Project Name/Site: **AirportWayProfessionalBuilding**
Project Contact: **Lyle Gresehover**

Refer to sample receipt form for information on sample condition.

LCS for HBN 1746780 [XXX/36589 (1361367) LCS

AK102 - Surrogate recovery in the LCS for 5a androstane (125%) does not meet QC criteria.

LCSD for HBN 1746780 [XXX/3658 (1361368) LCSD

AK102/103 - Surrogate recoveries in the LCSD for 5a androstane (124%) and n triacontane (121%) do not meet QC criteria.

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

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

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) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 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
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
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
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

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

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW1-1016	1168740001	10/14/2016	10/15/2016	Water (Surface, Eff., Ground)
MW2-1016	1168740002	10/14/2016	10/15/2016	Water (Surface, Eff., Ground)
MW3-1016	1168740003	10/14/2016	10/15/2016	Water (Surface, Eff., Ground)
Trip Blank	1168740004	10/14/2016	10/15/2016	Water (Surface, Eff., Ground)
DUP-1016	1168740005	10/14/2016	10/15/2016	Water (Surface, Eff., Ground)

Method	Method Description
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO Low Volume (W)

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

Detectable Results Summary

Client Sample ID: **MW1-1016**
Lab Sample ID: 1168740001
Volatile Fuels

Parameter	Result	Units
Gasoline Range Organics	0.0389J	mg/L
o-Xylene	0.440J	ug/L

Client Sample ID: **MW2-1016**
Lab Sample ID: 1168740002
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	1.95	mg/L

Client Sample ID: **MW3-1016**
Lab Sample ID: 1168740003
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	0.269J	mg/L

Client Sample ID: **Trip Blank**
Lab Sample ID: 1168740004
Volatile Fuels

Parameter	Result	Units
o-Xylene	0.540J	ug/L

Client Sample ID: **DUP-1016**
Lab Sample ID: 1168740005
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	1.45	mg/L

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Results of **MW1-1016**

Client Sample ID: **MW1-1016**
Client Project ID: **AirportWayProfessionalBuilding**
Lab Sample ID: 1168740001
Lab Project ID: 1168740

Collection Date: 10/14/16 13:05
Received Date: 10/15/16 11:16
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	0.305	U	0.610	0.183	mg/L	1		10/25/16 22:30
Surrogates								
5a Androstane (surr)	94		50-150		%	1		10/25/16 22:30

Batch Information

Analytical Batch: XFC13011
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/25/16 22:30
Container ID: 1168740001-D

Prep Batch: XXX36589
Prep Method: SW3520C
Prep Date/Time: 10/25/16 10:22
Prep Initial Wt./Vol.: 246 mL
Prep Extract Vol: 1 mL

Print Date: 10/31/2016 8:41:15AM

J flagging is activated

Results of **MW1-1016**

Client Sample ID: **MW1-1016**
Client Project ID: **AirportWayProfessionalBuilding**
Lab Sample ID: 1168740001
Lab Project ID: 1168740

Collection Date: 10/14/16 13:05
Received Date: 10/15/16 11:16
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	0.0389	J	0.100	0.0310	mg/L	1		10/26/16 05:10
Surrogates								
4-Bromofluorobenzene (surr)	102		50-150		%	1		10/26/16 05:10

Batch Information

Analytical Batch: VFC13414
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/26/16 05:10
Container ID: 1168740001-A

Prep Batch: VXX29846
Prep Method: SW5030B
Prep Date/Time: 10/25/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250	U	0.500	0.150	ug/L	1		10/26/16 05:10
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/26/16 05:10
o-Xylene	0.440	J	1.00	0.310	ug/L	1		10/26/16 05:10
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		10/26/16 05:10
Toluene	0.500	U	1.00	0.310	ug/L	1		10/26/16 05:10
Surrogates								
1,4-Difluorobenzene (surr)	87.1		77-115		%	1		10/26/16 05:10

Batch Information

Analytical Batch: VFC13414
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/26/16 05:10
Container ID: 1168740001-A

Prep Batch: VXX29846
Prep Method: SW5030B
Prep Date/Time: 10/25/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW2-1016**

Client Sample ID: **MW2-1016**
Client Project ID: **AirportWayProfessionalBuilding**
Lab Sample ID: 1168740002
Lab Project ID: 1168740

Collection Date: 10/14/16 15:00
Received Date: 10/15/16 11:16
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	1.95		0.566	0.170	mg/L	1		10/25/16 22:39
Surrogates								
5a Androstane (surr)	95.9		50-150		%	1		10/25/16 22:39

Batch Information

Analytical Batch: XFC13011
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/25/16 22:39
Container ID: 1168740002-D

Prep Batch: XXX36589
Prep Method: SW3520C
Prep Date/Time: 10/25/16 10:22
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

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Results of **MW2-1016**

Client Sample ID: **MW2-1016**
Client Project ID: **AirportWayProfessionalBuilding**
Lab Sample ID: 1168740002
Lab Project ID: 1168740

Collection Date: 10/14/16 15:00
Received Date: 10/15/16 11:16
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		10/26/16 05:29
Surrogates								
4-Bromofluorobenzene (surr)	107		50-150		%	1		10/26/16 05:29

Batch Information

Analytical Batch: VFC13414
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/26/16 05:29
Container ID: 1168740002-A

Prep Batch: VXX29846
Prep Method: SW5030B
Prep Date/Time: 10/25/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250 U		0.500	0.150	ug/L	1		10/26/16 05:29
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/26/16 05:29
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/26/16 05:29
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/26/16 05:29
Toluene	0.500 U		1.00	0.310	ug/L	1		10/26/16 05:29
Surrogates								
1,4-Difluorobenzene (surr)	83.5		77-115		%	1		10/26/16 05:29

Batch Information

Analytical Batch: VFC13414
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/26/16 05:29
Container ID: 1168740002-A

Prep Batch: VXX29846
Prep Method: SW5030B
Prep Date/Time: 10/25/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW3-1016**

Client Sample ID: **MW3-1016**
Client Project ID: **AirportWayProfessionalBuilding**
Lab Sample ID: 1168740003
Lab Project ID: 1168740

Collection Date: 10/14/16 14:10
Received Date: 10/15/16 11:16
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	0.269	J	0.566	0.170	mg/L	1		10/25/16 22:49
Surrogates								
5a Androstane (surr)	91.4		50-150		%	1		10/25/16 22:49

Batch Information

Analytical Batch: XFC13011
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/25/16 22:49
Container ID: 1168740003-D

Prep Batch: XXX36589
Prep Method: SW3520C
Prep Date/Time: 10/25/16 10:22
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

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Results of **MW3-1016**

Client Sample ID: **MW3-1016**
Client Project ID: **AirportWayProfessionalBuilding**
Lab Sample ID: 1168740003
Lab Project ID: 1168740

Collection Date: 10/14/16 14:10
Received Date: 10/15/16 11:16
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		10/26/16 05:47
Surrogates								
4-Bromofluorobenzene (surr)	109		50-150		%	1		10/26/16 05:47

Batch Information

Analytical Batch: VFC13414
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/26/16 05:47
Container ID: 1168740003-A

Prep Batch: VXX29846
Prep Method: SW5030B
Prep Date/Time: 10/25/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250 U		0.500	0.150	ug/L	1		10/26/16 05:47
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/26/16 05:47
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/26/16 05:47
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/26/16 05:47
Toluene	0.500 U		1.00	0.310	ug/L	1		10/26/16 05:47
Surrogates								
1,4-Difluorobenzene (surr)	84.3		77-115		%	1		10/26/16 05:47

Batch Information

Analytical Batch: VFC13414
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/26/16 05:47
Container ID: 1168740003-A

Prep Batch: VXX29846
Prep Method: SW5030B
Prep Date/Time: 10/25/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **AirportWayProfessionalBuilding**
Lab Sample ID: 1168740004
Lab Project ID: 1168740

Collection Date: 10/14/16 12:00
Received Date: 10/15/16 11:16
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		10/27/16 02:46
Surrogates								
4-Bromofluorobenzene (surr)	102		50-150		%	1		10/27/16 02:46

Batch Information

Analytical Batch: VFC13419
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/27/16 02:46
Container ID: 1168740004-A

Prep Batch: VXX29856
Prep Method: SW5030B
Prep Date/Time: 10/26/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250 U		0.500	0.150	ug/L	1		10/27/16 02:46
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/27/16 02:46
o-Xylene	0.540 J		1.00	0.310	ug/L	1		10/27/16 02:46
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/27/16 02:46
Toluene	0.500 U		1.00	0.310	ug/L	1		10/27/16 02:46
Surrogates								
1,4-Difluorobenzene (surr)	96.3		77-115		%	1		10/27/16 02:46

Batch Information

Analytical Batch: VFC13419
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/27/16 02:46
Container ID: 1168740004-A

Prep Batch: VXX29856
Prep Method: SW5030B
Prep Date/Time: 10/26/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **DUP-1016**

Client Sample ID: **DUP-1016**
Client Project ID: **AirportWayProfessionalBuilding**
Lab Sample ID: 1168740005
Lab Project ID: 1168740

Collection Date: 10/14/16 15:30
Received Date: 10/15/16 11:16
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	1.45		0.566	0.170	mg/L	1		10/25/16 22:59
Surrogates								
5a Androstane (surr)	87.2		50-150		%	1		10/25/16 22:59

Batch Information

Analytical Batch: XFC13011
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 10/25/16 22:59
Container ID: 1168740005-D

Prep Batch: XXX36589
Prep Method: SW3520C
Prep Date/Time: 10/25/16 10:22
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

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Results of **DUP-1016**

Client Sample ID: **DUP-1016**
Client Project ID: **AirportWayProfessionalBuilding**
Lab Sample ID: 1168740005
Lab Project ID: 1168740

Collection Date: 10/14/16 15:30
Received Date: 10/15/16 11:16
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		10/27/16 03:05
Surrogates								
4-Bromofluorobenzene (surr)	103		50-150		%	1		10/27/16 03:05

Batch Information

Analytical Batch: VFC13419
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/27/16 03:05
Container ID: 1168740005-A

Prep Batch: VXX29856
Prep Method: SW5030B
Prep Date/Time: 10/26/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250 U		0.500	0.150	ug/L	1		10/27/16 03:05
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/27/16 03:05
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/27/16 03:05
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/27/16 03:05
Toluene	0.500 U		1.00	0.310	ug/L	1		10/27/16 03:05
Surrogates								
1,4-Difluorobenzene (surr)	92.9		77-115		%	1		10/27/16 03:05

Batch Information

Analytical Batch: VFC13419
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/27/16 03:05
Container ID: 1168740005-A

Prep Batch: VXX29856
Prep Method: SW5030B
Prep Date/Time: 10/26/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1746877 [VXX/29846]
Blank Lab ID: 1361655

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168740001, 1168740002, 1168740003

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0468J	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	105	50-150		%

Batch Information

Analytical Batch: VFC13414
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/25/2016 11:54:00AM

Prep Batch: VXX29846
Prep Method: SW5030B
Prep Date/Time: 10/25/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1168740 [VXX29846]
Blank Spike Lab ID: 1361658
Date Analyzed: 10/25/2016 22:23

Spike Duplicate ID: LCSD for HBN 1168740 [VXX29846]
Spike Duplicate Lab ID: 1361659
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168740001, 1168740002, 1168740003

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	0.978	98	1.00	1.01	101	(60-120)	3.30	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	112	112	0.0500	113	113	(50-150)	0.41	

Batch Information

Analytical Batch: **VFC13414**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX29846**
Prep Method: **SW5030B**
Prep Date/Time: **10/25/2016 06:00**
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 1746877 [VXX/29846]
Blank Lab ID: 1361655

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168740001, 1168740002, 1168740003

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	88.6	77-115		%

Batch Information

Analytical Batch: VFC13414
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/25/2016 11:54:00AM

Prep Batch: VXX29846
Prep Method: SW5030B
Prep Date/Time: 10/25/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1168740 [VXX29846]
Blank Spike Lab ID: 1361656
Date Analyzed: 10/25/2016 22:04

Spike Duplicate ID: LCSD for HBN 1168740 [VXX29846]
Spike Duplicate Lab ID: 1361657
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168740001, 1168740002, 1168740003

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	103	103	100	101	101	(80-120)	2.50	(< 20)
Ethylbenzene	100	104	104	100	102	102	(75-125)	1.80	(< 20)
o-Xylene	100	102	102	100	96.1	96	(80-120)	6.40	(< 20)
P & M -Xylene	200	208	104	200	196	98	(75-130)	6.10	(< 20)
Toluene	100	104	104	100	108	108	(75-120)	3.50	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	93.8	94	50	94.9	95	(77-115)	1.20	

Batch Information

Analytical Batch: **VFC13414**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX29846**
Prep Method: **SW5030B**
Prep Date/Time: **10/25/2016 06:00**
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1746977 [VXX/29856]
Blank Lab ID: 1361947

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168740004, 1168740005

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	102	50-150		%

Batch Information

Analytical Batch: VFC13419
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/26/2016 10:42:00AM

Prep Batch: VXX29856
Prep Method: SW5030B
Prep Date/Time: 10/26/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1168740 [VXX29856]
Blank Spike Lab ID: 1361950
Date Analyzed: 10/26/2016 21:43

Spike Duplicate ID: LCSD for HBN 1168740 [VXX29856]
Spike Duplicate Lab ID: 1361951
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168740004, 1168740005

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	1.04	104	1.00	1.07	107	(60-120)	2.00	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	110	110	0.0500	109	109	(50-150)	1.30	

Batch Information

Analytical Batch: **VFC13419**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX29856**
Prep Method: **SW5030B**
Prep Date/Time: **10/26/2016 06:00**
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 1746977 [VXX/29856]
Blank Lab ID: 1361947

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168740004, 1168740005

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	91.1	77-115		%

Batch Information

Analytical Batch: VFC13419
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/26/2016 10:42:00AM

Prep Batch: VXX29856
Prep Method: SW5030B
Prep Date/Time: 10/26/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1168740 [VXX29856]
Blank Spike Lab ID: 1361948
Date Analyzed: 10/26/2016 21:24

Spike Duplicate ID: LCSD for HBN 1168740 [VXX29856]
Spike Duplicate Lab ID: 1361949
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168740004, 1168740005

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	108	108	100	110	110	(80-120)	1.00	(< 20)
Ethylbenzene	100	104	104	100	104	104	(75-125)	0.06	(< 20)
o-Xylene	100	98.9	99	100	97.7	98	(80-120)	1.20	(< 20)
P & M -Xylene	200	203	101	200	200	100	(75-130)	1.30	(< 20)
Toluene	100	103	103	100	102	102	(75-120)	1.00	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	104	104	50	102	102	(77-115)	2.60	

Batch Information

Analytical Batch: **VFC13419**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX29856**
Prep Method: **SW5030B**
Prep Date/Time: **10/26/2016 06:00**
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L 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

Method Blank

Blank ID: MB for HBN 1746780 [XXX/36589]
Blank Lab ID: 1361366

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168740001, 1168740002, 1168740003, 1168740005

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	93.8	60-120		%

Batch Information

Analytical Batch: XFC13011
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: CRA
Analytical Date/Time: 10/25/2016 5:49:00PM

Prep Batch: XXX36589
Prep Method: SW3520C
Prep Date/Time: 10/25/2016 10:22:32AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 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 1168740 [XXX36589]
Blank Spike Lab ID: 1361367
Date Analyzed: 10/26/2016 13:45

Spike Duplicate ID: LCSD for HBN 1168740 [XXX36589]
Spike Duplicate Lab ID: 1361368
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168740001, 1168740002, 1168740003, 1168740005

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	22.9	115		20	23.2	116	(75-125)	1.10	(< 20)
Surrogates										
5a Androstane (surr)	0.4	125	125	*	0.4	124	124	* (60-120)	1.10	

Batch Information

Analytical Batch: **XFC13015**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **CRA**

Prep Batch: **XXX36589**
Prep Method: **SW3520C**
Prep Date/Time: **10/25/2016 10:22**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

1168740

ARES
P.O. Box 83050
Fairbanks, Alaska 99708
Phone: 907 374 3226
Fax: 907 374 2519

Chain of Custody Report

Client: Alaska Resources and Environmental Services

Report To:	Lyle Gresehover	Invoice To: ARES, P.O. Box 83050, Fairbanks, Alaska 99708	Laboratory Name: SGS
Address:	ARES, P.O. Box 83050		Address: 3180 Peger Rd #190, Fairbanks, AK 99709
Email:	lyle@ak-res.com		(907) 474-8656
Phone:	(907) 374-3226 Fax: (907)374-3219	P.O. Number	

Project Name: Airport Way Professional Building
Project Number:
Sampled By: Dustin Stahl

Turnaround Request In Business Days
Organic & Inorganic Analyses: 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1
Specify Other
Report Tier Levels: Tier II reporting requested (results + QC)

Preservative: HCL | HCL | | MEOH | N/A | N/A | MEOH

Requested Analyses: AK 102 DRO; GRO/BTEX AK101/8021B

Sample Identification	Sampling Date/ Time		Matrix (W,S,O)	# of Cont	Location / Comments	Lab ID
MW1-1016	10/16/2016	~~1200~~ 1305	W	5		1A-E
MW2-1016	10/16/2016	~~1245~~ 1345	W	5		2A-E
MW3-1016	10/16/2016	~~1330~~ 1410	W	5		3A-E
Trip Blank	10/16/2016	~~1100~~ 1200	W	3		4A-C
DUP-1016	1410	1530	W	5		5A-E

Released By: Dustin Stahl — Print Name: Dustin Stahl — Firm: ARES — Date: 10/14/2016 — Time: 1535
Received By: — Print Name: — Firm: SGS — Date: 10-14-16 — Time: 1535
Released By: — Print Name: — Firm: SGS — Date: 10-14-16 — Time: 1615
Received By: — Print Name: Nicholas Wells — Firm: SGS — Date: 10/15/16 — Time: 11:16

Additional Remarks: ANC: TB: 0.7 #D12 CS:1F,1B

Temp: 2-1

Page 1 of 1

SGS

1168740

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 @ 2.1 w/Therm. ID: 11 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 #: 334646

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

SGS

e-SAMPLE RECEIPT FORM

1168740

Review Criteria	Y/N (yes/no)	Exceptions Noted below
		exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Y	1-F, 1-B
COC accompanied samples?	Y	
**exemption permitted if chilled & collected <8hrs ago or chlling not required (i.e., waste, oil)		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Y	Cooler ID: 1 @ 0.7 °C Therm ID: D12
		Cooler ID: @ °C Therm ID:
		Cooler ID: @ °C Therm ID:
		Cooler ID: @ °C Therm ID:
		Cooler ID: @ °C Therm ID:
*If >6°C, were samples collected <8 hours ago?		
If <0°C, were sample containers ice free?		
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.		
		Note: Refer to form F-083 "Sample Guide" for hold times.
Were samples received within hold time?	Y	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	Y	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous?	Y	
		***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	Y	
IF APPLICABLE		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Y	
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Y	
Were all soil VOAs field extracted with MeOH+BFB?		

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

Additional notes (if applicable):

Collection dates provided are incorrect as they suggest future sampling.

Collection date is 10/14/16 per the Project Manager.

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1168740001-A	HCL to pH < 2	OK			
1168740001-B	HCL to pH < 2	OK			
1168740001-C	HCL to pH < 2	OK			
1168740001-D	HCL to pH < 2	OK			
1168740001-E	HCL to pH < 2	OK			
1168740002-A	HCL to pH < 2	OK			
1168740002-B	HCL to pH < 2	OK			
1168740002-C	HCL to pH < 2	OK			
1168740002-D	HCL to pH < 2	OK			
1168740002-E	HCL to pH < 2	OK			
1168740003-A	HCL to pH < 2	OK			
1168740003-B	HCL to pH < 2	OK			
1168740003-C	HCL to pH < 2	OK			
1168740003-D	HCL to pH < 2	OK			
1168740003-E	HCL to pH < 2	OK			
1168740004-A	HCL to pH < 2	OK			
1168740004-B	HCL to pH < 2	OK			
1168740004-C	HCL to pH < 2	OK			
1168740005-A	HCL to pH < 2	OK			
1168740005-B	HCL to pH < 2	OK			
1168740005-C	HCL to pH < 2	OK			
1168740005-D	HCL to pH < 2	OK			
1168740005-E	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.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Laboratory Data Review Checklist

Completed By:

Alyson McPhetres

Title:

Environmental Specialist/ EIT

Date:

November 2017

CS Report Name:

Groundwater Monitoring & Well Installation Report: Airport Way Professional Building

Consultant Firm:

Alaska Resources and Environmental Services, LLC

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1168740

ADEC File Number:

102.38.143

Hazard Identification Number:

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:

The samples were not transferred or sub-contracted to another laboratory.

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:

No adverse conditions were noted.

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:

The collection dates on the COC were logged incorrectly and suggested a date in the future. The project manager was notified and the lab logged the correct sample time.

e. Data quality or usability affected?

(•) Yes ( ) No

Comments:

The data quality and usability are not affected.

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No

Comments:

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

(•) Yes ( ) No

Comments:

The AK 102 LCS and LCSD each had one or more failed surrogate recoveries.

c. Were all corrective actions documented?

(•) Yes ( ) No

Comments:

No corrective actions were required.

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

(•) Yes ( ) No

Comments:

The case narrative does not discuss the impact 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:

e. Data quality or usability affected?

○ Yes ◉ No

Comments:

The data quality and usability are not affected.

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:

No samples are affected.

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

◉ Yes ○ No

Comments:

No samples are affected.

v. Data quality or usability affected?

Comments:

The data quality and usability are not affected.

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:

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

◉ Yes ○ No

Comments:

No analyses for metals/inorganics were performed.

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:

No samples are affected.

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

(•) Yes ( ) No

Comments:

No samples are affected.

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

Comments:

The data quality and usability are not affected.

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:

AK102 - Surrogate recovery in the LCS for 5a androstane (125%) does not meet QC criteria.
AK102/103 - Surrogate recoveries in the LCSD for 5a androstane (124%) and n triacontane (121%) do not meet QC criteria.

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

◉ Yes ○ No

Comments:

The failed surrogate recoveries are flagged with an "*".

iv. Data quality or usability affected?

Comments:

The data quality is affected. The data remains usable. The data for DRO should be viewed qualitatively rather than quantitatively.

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:

All samples were shipped in a single cooler.

iii. All results less than LOQ?

◉ Yes ○ No

Comments:

O-xylene was detected in the trip blank above the MDL and below one half the reporting limit. There is no evidence of cross-contamination because toluene was not detected in three of the four samples No impact on data quality and usability is expected.

iv. If above LOQ, what samples are affected?

○ Yes ◉ No

Comments:

No samples are affected.

v. Data quality or usability affected?

Comments:

The data quality and usability are not affected.

e. Field Duplicate

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

◉ Yes ○ No

Comments:

Sample DUP-1016 is the blind field duplicate of MW2-1016.

ii. Submitted blind to lab?

◉ Yes ○ No

Comments:

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:

The RPD for DRO is 29.4%. The remaining analytes were undetected in either one or both of the samples.

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

Comments:

The data quality and usability are not affected.

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

○ Yes ○ No ◉ Not Applicable

Comments:

No decontamination or equipment blank was required in the work plan.

i. All results less than LOQ?

◉ Yes ○ No

Comments:

No decontamination or equipment blank was required in the work plan.

ii. If above LOQ, what samples are affected?

Comments:

No decontamination or equipment blank was required in the work plan.

iii. Data quality or usability affected?

Comments:

No decontamination or equipment blank was required in the work plan.

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

a. Defined and appropriate?

(•) Yes ( ) No

Comments:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Spokane
11922 East 1st Ave
Spokane, WA 99206
Tel: (509)924-9200

TestAmerica Job ID: 590-6861-1
Client Project/Site: Airport Way Professional Building

For:
Alaska Resources & Environment
PO BOX 83050
Fairbanks, Alaska 99708

Attn: Lyle Gresehover

M. Elaine Walker

Authorized for release by:
8/23/2017 1:47:03 PM

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

Table of Contents

Job ID: 590-6861-1

Laboratory: TestAmerica Spokane

Narrative

Job Narrative
590-6861-1

Receipt
Five samples were received on 8/17/2017 11:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.7º C and 3.4º C.

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

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

Sample Summary

Client: Alaska Resources & Environment
Project/Site: Airport Way Professional Building

TestAmerica Job ID: 590-6861-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-6861-1	MW1-817	Water	08/15/17 12:10	08/17/17 11:00
590-6861-2	MW2-817	Water	08/15/17 13:15	08/17/17 11:00
590-6861-3	MW3-817	Water	08/15/17 11:05	08/17/17 11:00
590-6861-4	DUP-817	Water	08/15/17 13:30	08/17/17 11:00
590-6861-5	Trip Blank	Water	08/15/17 10:00	08/17/17 11:00

Definitions/Glossary

Client: Alaska Resources & Environment
Project/Site: Airport Way Professional Building

TestAmerica Job ID: 590-6861-1

Qualifiers

GC Semi VOA

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

Glossary

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

Client Sample ID: MW1-817

Date Collected: 08/15/17 12:10
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-1

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			08/17/17 14:14	1
Ethylbenzene	ND		1.0	0.20	ug/L			08/17/17 14:14	1
m,p-Xylene	ND		2.0	0.28	ug/L			08/17/17 14:14	1
o-Xylene	ND		1.0	0.16	ug/L			08/17/17 14:14	1
Toluene	ND		1.0	0.31	ug/L			08/17/17 14:14	1
Xylenes, Total	ND		3.0	0.44	ug/L			08/17/17 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 125*		*08/17/17 14:14*	*1*
4-Bromofluorobenzene (Surr)	*94*		*69 - 120*		*08/17/17 14:14*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 120*		*08/17/17 14:14*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*08/17/17 14:14*	*1*

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		150	120	ug/L			08/17/17 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*68.7 - 141*		*08/17/17 14:14*	*1*

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.25	0.081	mg/L		08/18/17 10:15	08/22/17 10:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*82*		*50 - 150*	*08/18/17 10:15*	*08/22/17 10:24*	*1*
n-Triacontane-d62	*86*		*50 - 150*	*08/18/17 10:15*	*08/22/17 10:24*	*1*

Client Sample ID: MW2-817

Date Collected: 08/15/17 13:15
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-2

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			08/17/17 15:16	1
Ethylbenzene	ND		1.0	0.20	ug/L			08/17/17 15:16	1
m,p-Xylene	ND		2.0	0.28	ug/L			08/17/17 15:16	1
o-Xylene	ND		1.0	0.16	ug/L			08/17/17 15:16	1
Toluene	ND		1.0	0.31	ug/L			08/17/17 15:16	1
Xylenes, Total	ND		3.0	0.44	ug/L			08/17/17 15:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 125*		*08/17/17 15:16*	*1*
4-Bromofluorobenzene (Surr)	*93*		*69 - 120*		*08/17/17 15:16*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 120*		*08/17/17 15:16*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*08/17/17 15:16*	*1*

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		150	120	ug/L			08/17/17 15:16	1

Client Sample ID: MW2-817
Date Collected: 08/15/17 13:15
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-2
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*93*		*68.7 - 141*		*08/17/17 15:16*	*1*

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**0.40**		0.25	0.080	mg/L		08/18/17 10:15	08/22/17 10:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	*93*		*50 - 150*	*08/18/17 10:15*	*08/22/17 10:41*	*1*
n-Triacontane-d62	*91*		*50 - 150*	*08/18/17 10:15*	*08/22/17 10:41*	*1*

Client Sample ID: MW3-817
Date Collected: 08/15/17 11:05
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			08/17/17 16:18	1
Ethylbenzene	ND		1.0	0.20	ug/L			08/17/17 16:18	1
m,p-Xylene	ND		2.0	0.28	ug/L			08/17/17 16:18	1
o-Xylene	ND		1.0	0.16	ug/L			08/17/17 16:18	1
Toluene	ND		1.0	0.31	ug/L			08/17/17 16:18	1
Xylenes, Total	ND		3.0	0.44	ug/L			08/17/17 16:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 125*		*08/17/17 16:18*	*1*
4-Bromofluorobenzene (Surr)	*96*		*69 - 120*		*08/17/17 16:18*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*08/17/17 16:18*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*08/17/17 16:18*	*1*

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		150	120	ug/L			08/17/17 16:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*96*		*68.7 - 141*		*08/17/17 16:18*	*1*

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**0.19**	**J**	0.25	0.081	mg/L		08/18/17 10:15	08/22/17 10:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	*72*		*50 - 150*	*08/18/17 10:15*	*08/22/17 10:58*	*1*
n-Triacontane-d62	*76*		*50 - 150*	*08/18/17 10:15*	*08/22/17 10:58*	*1*

Client Sample ID: DUP-817
Date Collected: 08/15/17 13:30
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			08/17/17 16:38	1

Client Sample ID: DUP-817

Date Collected: 08/15/17 13:30
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		1.0	0.20	ug/L			08/17/17 16:38	1
m,p-Xylene	ND		2.0	0.28	ug/L			08/17/17 16:38	1
o-Xylene	ND		1.0	0.16	ug/L			08/17/17 16:38	1
Toluene	ND		1.0	0.31	ug/L			08/17/17 16:38	1
Xylenes, Total	ND		3.0	0.44	ug/L			08/17/17 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 125*		*08/17/17 16:38*	*1*
4-Bromofluorobenzene (Surr)	*91*		*69 - 120*		*08/17/17 16:38*	*1*
Dibromofluoromethane (Surr)	*110*		*80 - 120*		*08/17/17 16:38*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*08/17/17 16:38*	*1*

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		150	120	ug/L			08/17/17 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*68.7 - 141*		*08/17/17 16:38*	*1*

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**0.41**		0.25	0.081	mg/L		08/18/17 10:15	08/22/17 11:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*91*		*50 - 150*	*08/18/17 10:15*	*08/22/17 11:15*	*1*
n-Triacontane-d62	*90*		*50 - 150*	*08/18/17 10:15*	*08/22/17 11:15*	*1*

Client Sample ID: Trip Blank

Date Collected: 08/15/17 10:00
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			08/17/17 16:59	1
Ethylbenzene	ND		1.0	0.20	ug/L			08/17/17 16:59	1
m,p-Xylene	ND		2.0	0.28	ug/L			08/17/17 16:59	1
o-Xylene	ND		1.0	0.16	ug/L			08/17/17 16:59	1
Toluene	ND		1.0	0.31	ug/L			08/17/17 16:59	1
Xylenes, Total	ND		3.0	0.44	ug/L			08/17/17 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 125*		*08/17/17 16:59*	*1*
4-Bromofluorobenzene (Surr)	*90*		*69 - 120*		*08/17/17 16:59*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 120*		*08/17/17 16:59*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*08/17/17 16:59*	*1*

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		150	120	ug/L			08/17/17 16:59	1

Client Sample Results

Client: Alaska Resources & Environment
Project/Site: Airport Way Professional Building

TestAmerica Job ID: 590-6861-1

Client Sample ID: Trip Blank
Date Collected: 08/15/17 10:00
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-5
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*90*		*68.7 - 141*		*08/17/17 16:59*	*1*

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

Lab Sample ID: MB 590-13439/5
Matrix: Water
Analysis Batch: 13439

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40	0.093	ug/L			08/17/17 10:58	1
Ethylbenzene	ND		1.0	0.20	ug/L			08/17/17 10:58	1
m,p-Xylene	ND		2.0	0.28	ug/L			08/17/17 10:58	1
o-Xylene	ND		1.0	0.16	ug/L			08/17/17 10:58	1
Toluene	ND		1.0	0.31	ug/L			08/17/17 10:58	1
Xylenes, Total	ND		3.0	0.44	ug/L			08/17/17 10:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 125*		*08/17/17 10:58*	*1*
4-Bromofluorobenzene (Surr)	*96*		*69 - 120*		*08/17/17 10:58*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*08/17/17 10:58*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*08/17/17 10:58*	*1*

Lab Sample ID: LCS 590-13439/1003
Matrix: Water
Analysis Batch: 13439

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	11.4		ug/L		114	80 - 120
Ethylbenzene	10.0	11.4		ug/L		114	80 - 120
m,p-Xylene	10.0	11.9		ug/L		119	80 - 120
o-Xylene	10.0	12.0		ug/L		120	80 - 120
Toluene	10.0	11.2		ug/L		112	80 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 125*
4-Bromofluorobenzene (Surr)	*99*		*69 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 120*
Toluene-d8 (Surr)	*95*		*80 - 120*

Lab Sample ID: LCSD 590-13439/22
Matrix: Water
Analysis Batch: 13439

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	10.3		ug/L		103	80 - 120	11	25
Ethylbenzene	10.0	10.3		ug/L		103	80 - 120	10	25
m,p-Xylene	10.0	10.7		ug/L		107	80 - 120	11	25
o-Xylene	10.0	10.8		ug/L		108	80 - 120	11	25
Toluene	10.0	9.95		ug/L		99	80 - 123	12	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 125*
4-Bromofluorobenzene (Surr)	*95*		*69 - 120*
Dibromofluoromethane (Surr)	*106*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

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

Lab Sample ID: 590-6861-1 MS
Matrix: Water
Analysis Batch: 13439

Client Sample ID: MW1-817
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	ND		10.0	11.0		ug/L		110	50 - 150
Ethylbenzene	ND		10.0	11.1		ug/L		111	50 - 150
m,p-Xylene	ND		10.0	11.7		ug/L		117	50 - 150
o-Xylene	ND		10.0	11.3		ug/L		113	50 - 150
Toluene	ND		10.0	10.9		ug/L		109	50 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 125*
4-Bromofluorobenzene (Surr)	*98*		*69 - 120*
Dibromofluoromethane (Surr)	*104*		*80 - 120*
Toluene-d8 (Surr)	*98*		*80 - 120*

Lab Sample ID: 590-6861-1 MSD
Matrix: Water
Analysis Batch: 13439

Client Sample ID: MW1-817
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	ND		10.0	10.7		ug/L		107	50 - 150	3	35
Ethylbenzene	ND		10.0	10.9		ug/L		109	50 - 150	2	35
m,p-Xylene	ND		10.0	11.1		ug/L		111	50 - 150	5	35
o-Xylene	ND		10.0	10.8		ug/L		108	50 - 150	4	35
Toluene	ND		10.0	10.5		ug/L		105	50 - 150	4	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 125*
4-Bromofluorobenzene (Surr)	*96*		*69 - 120*
Dibromofluoromethane (Surr)	*107*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Lab Sample ID: MB 590-13441/5
Matrix: Water
Analysis Batch: 13441

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		150	120	ug/L			08/17/17 10:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*68.7 - 141*		*08/17/17 10:58*	*1*

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS) (Continued)

Lab Sample ID: LCS 590-13441/1004
Matrix: Water
Analysis Batch: 13441

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics [C6 - C10]	1000	1010		ug/L		101	60 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*91*		*68.7 - 141*

Lab Sample ID: LCSD 590-13441/1021
Matrix: Water
Analysis Batch: 13441

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	1000	996		ug/L		100	60 - 120	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*68.7 - 141*

Lab Sample ID: 590-6861-2 MS
Matrix: Water
Analysis Batch: 13441

Client Sample ID: MW2-817
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics [C6 - C10]	ND		1000	1050		ug/L		105	55.6 - 126

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*68.7 - 141*

Lab Sample ID: 590-6861-2 MSD
Matrix: Water
Analysis Batch: 13441

Client Sample ID: MW2-817
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		1000	1070		ug/L		107	55.6 - 126	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*68.7 - 141*

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Lab Sample ID: MB 590-13455/1-A
Matrix: Water
Analysis Batch: 13494

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 13455

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.25	0.080	mg/L		08/18/17 10:15	08/22/17 09:34	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	77		50 - 150	08/18/17 10:15	08/22/17 09:34	1
n-Triacontane-d62	81		50 - 150	08/18/17 10:15	08/22/17 09:34	1

Lab Sample ID: LCS 590-13455/2-A
Matrix: Water
Analysis Batch: 13494

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 13455

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	1.60	1.32		mg/L		83	75 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	90		50 - 150
n-Triacontane-d62	95		50 - 150

Lab Sample ID: LCSD 590-13455/3-A
Matrix: Water
Analysis Batch: 13494

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 13455

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	1.60	1.35		mg/L		84	75 - 125	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	97		50 - 150
n-Triacontane-d62	102		50 - 150

Lab Chronicle

Client: Alaska Resources & Environment
Project/Site: Airport Way Professional Building

TestAmerica Job ID: 590-6861-1

Client Sample ID: MW1-817
Date Collected: 08/15/17 12:10
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	13439	08/17/17 14:14	MRS	TAL SPK
Total/NA	Analysis	AK101		1	43 mL	43 mL	13441	08/17/17 14:14	CBW	TAL SPK
Total/NA	Prep	3510C			247.8 mL	2 mL	13455	08/18/17 10:15	SJB	TAL SPK
Total/NA	Analysis	AK102 & 103		1			13494	08/22/17 10:24	NMI	TAL SPK

Client Sample ID: MW2-817
Date Collected: 08/15/17 13:15
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	13439	08/17/17 15:16	MRS	TAL SPK
Total/NA	Analysis	AK101		1	43 mL	43 mL	13441	08/17/17 15:16	CBW	TAL SPK
Total/NA	Prep	3510C			249.9 mL	2 mL	13455	08/18/17 10:15	SJB	TAL SPK
Total/NA	Analysis	AK102 & 103		1			13494	08/22/17 10:41	NMI	TAL SPK

Client Sample ID: MW3-817
Date Collected: 08/15/17 11:05
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	13439	08/17/17 16:18	MRS	TAL SPK
Total/NA	Analysis	AK101		1	43 mL	43 mL	13441	08/17/17 16:18	CBW	TAL SPK
Total/NA	Prep	3510C			246.1 mL	2 mL	13455	08/18/17 10:15	SJB	TAL SPK
Total/NA	Analysis	AK102 & 103		1			13494	08/22/17 10:58	NMI	TAL SPK

Client Sample ID: DUP-817
Date Collected: 08/15/17 13:30
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	13439	08/17/17 16:38	MRS	TAL SPK
Total/NA	Analysis	AK101		1	43 mL	43 mL	13441	08/17/17 16:38	CBW	TAL SPK
Total/NA	Prep	3510C			247.5 mL	2 mL	13455	08/18/17 10:15	SJB	TAL SPK
Total/NA	Analysis	AK102 & 103		1			13494	08/22/17 11:15	NMI	TAL SPK

Client Sample ID: Trip Blank
Date Collected: 08/15/17 10:00
Date Received: 08/17/17 11:00

Lab Sample ID: 590-6861-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	13439	08/17/17 16:59	MRS	TAL SPK
Total/NA	Analysis	AK101		1	43 mL	43 mL	13441	08/17/17 16:59	CBW	TAL SPK

Lab Chronicle

Client: Alaska Resources & Environment
Project/Site: Airport Way Professional Building

TestAmerica Job ID: 590-6861-1

Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Accreditation/Certification Summary

Client: Alaska Resources & Environment
TestAmerica Job ID: 590-6861-1
Project/Site: Airport Way Professional Building

Laboratory: TestAmerica Spokane

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	UST-071	10-31-17
Washington	State Program	10	C569	01-06-18

Laboratory: TestAmerica Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-02-18
California	State Program	9	2901	01-31-18
L-A-B	DoD ELAP		L2236	01-19-19
L-A-B	ISO/IEC 17025		L2236	01-19-19
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-05-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-18

Method Summary

Client: Alaska Resources & Environment
Project/Site: Airport Way Professional Building

TestAmerica Job ID: 590-6861-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SPK
AK101	Alaska - Gasoline Range Organics (GC/MS)	ADEC	TAL SPK
AK102 & 103	Alaska - Diesel Range Organics & Residual Range Organics (GC)	ADEC	TAL SPK

Protocol References:

ADEC = Alaska Department of Environmental Conservation

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

Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

ARES
P.O. Box 83050
Fairbanks, Alaska 99708
Phone: 907.374.3226
Fax: 907.374.2319

Chain of Custody Report

Client: Alaska Resources and Environmental Services		Invoice To: ARES, P.O. Box 83050, Fairbanks, Alaska 99708	Laboratory Name: Test America, Inc Address: 57755 8th St. East, Tacoma, WA 98424
Report To: Lyle Greschover Address: ARES, P.O. Box 83050 Email: lyle@ak-res.com Phone: (907) 374-3226 Fax: (907)374-3219		P.O. Number:	

Turnaround Request In Business Days

Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1

Specify Other:

Report Tier Levels: Tier II reporting requested (results + QC)

Project Name: Airport Way Professional Building
Project Number:
Sampled By: Dustin Stahl

Sample Identification	Sampling Date/ Time		Preservative: HCL	HCL									Matrix (W,S,O)	# of Cont.	Location / Comments	Lab ID
			Requested Analyses: AK 102 DRO	GRO/BTEX AK101/ 8021B												
1 MW1-817	08/15/2017	1210	X	X									W	8		
2 MW2-817	08/15/2017	1315	X	X									W	8		
3 MW3-817	08/15/2017	1105	X	X									W	8		
4 DUP-817	08/15/2017	1330	X	X									W	8		
5 Trip Blank	08/15/2017	1000		X									W	6		
6																
7																
8																
9																
10																

Released By: [signature]	Firm: ARES	Date: 08/15/2017 Time:	Received By: [signature] Print Name: Francisco Luna J. Firm: TA-SLH	Date: 8/16/17 Time: 1335
Released By: B. Stahl Print Name: B. Stahl	Firm: SEADD	Date: 8/16/17 Time: 1445	Received By: Sheila Kratz I.T.C.I. R004 Print Name: Sheila Kratz Firm: TA Spok	Date: 8/17/17 Time: 11:00

Additional Remarks:

Temp:

590-6861 Chain of Custody

TB A2 Cooler ___ Cor 5.4 Unc 4.7
Cooler Dsc Ly Blue 1 @Lab ___
Wet/Packs Packing Bubble
w/cs

Login Sample Receipt Checklist

Client: Alaska Resources & Environment

Job Number: 590-6861-1

Login Number: 6861
List Number: 1
Creator: Kratz, Sheila J

List Source: TestAmerica Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

Laboratory Data Review Checklist

Completed By:

Alyson McPhetres

Title:

Environmental Specialist/ EIT

Date:

November 2017

CS Report Name:

Groundwater Monitoring & Well Installation Report: Airport Way Professional Building

Consultant Firm:

Alaska Resources and Environmental Services, LLC

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1168617

ADEC File Number:

102.38.143

Hazard Identification Number:

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:

The sample was not transferred or sub-contracted to another laboratory.

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:

No adverse conditions were noted.

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:

No discrepancies were noted.

e. Data quality or usability affected?

(•) Yes ( ) No

Comments:

The data quality and usability are not affected.

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No

Comments:

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

(•) Yes ( ) No

Comments:

c. Were all corrective actions documented?

(•) Yes ( ) No

Comments:

No corrective actions were necessary.

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

(•) Yes ( ) No

Comments:

The case narrative does not discuss the impact 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:

e. Data quality or usability affected?

○ Yes ◉ No

Comments:

The data quality and usability are not affected.

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:

No samples are affected.

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

◉ Yes ○ No

Comments:

No samples are affected.

v. Data quality or usability affected?

Comments:

The data quality and usability are not affected.

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:

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

◉ Yes ○ No

Comments:

No analyses for metals/inorganics were performed.

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:

No samples are affected.

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

(•) Yes ( ) No

Comments:

No samples are affected.

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

Comments:

The data quality and usability are not affected.

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:

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

(•) Yes ( ) No

Comments:

No samples are affected.

iv. Data quality or usability affected?

Comments:

The data quality and usability are not affected.

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:

All samples were transported in the same cooler.

iii. All results less than LOQ?

(•) Yes ( ) No

Comments:

iv. If above LOQ, what samples are affected?

( ) Yes (•) No

Comments:

No samples are affected.

v. Data quality or usability affected?

Comments:

The data quality and usability are not affected.

e. Field Duplicate

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

(•) Yes ( ) No

Comments:

Sample DUP-817 is the blind field duplicate of sample MW2-817.

ii. Submitted blind to lab?

(•) Yes ( ) No

Comments:

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:

The RPD for DRO is 2.5%. No other analytes were detected in the samples.

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

Comments:

The data quality and usability are not affected.

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

( ) Yes ( ) No (•) Not Applicable

Comments:

No decontamination or equipment blank was required in the work plan.

i. All results less than LOQ?

(•) Yes ( ) No

Comments:

No decontamination or equipment blank was required in the work plan.

ii. If above LOQ, what samples are affected?

Comments:

No decontamination or equipment blank was required in the work plan.

iii. Data quality or usability affected?

Comments:

No decontamination or equipment blank was required in the work plan.

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

a. Defined and appropriate?

(•) Yes ( ) No

Comments:

Appendix E

Boring Logs

LOG OF MONITORING WELL MW-1

Project:	Airport Way Professional Building	**Casing Top Elevation:**	437.67'
Address:	1406 Kellum St, Fairbanks, AK	**Hole Depth:**	17' bgs
Drill Dates:	9/20/2016	**Hole Diameter:**	6"
Drill Rig:	6" Hollow Stem Auger	**Well Casing:**	2-inch Schedule 40 PVC
Log By:	Alyson McPhetres	**Groundwater Level:**	11.23' below TOC (Elev. 426.44')

Soil Sample	Sample Depth	Sample Date	Blow Counts (N Value)	Field PID (ppm)	Depth, feet bgs	USCS	Description
							Top of Casing (TOC)
				0.0	2	GW	Sandy Gravel
				0.0	4	OL	Brown silty loam
							Silty loam and sand
				0.0	6	SW	Sand
				0.1	8		
				0.0	10	SP	Sand with occasoinal round gravel
AWPB-916-02	9.5-11' bgs	9/20/2016					Water encountered 10.5' - 11' bgs
				0.0	12		Sand with occasional round gravel
					14		
					16		**END OF BOREHOLE AT 17' BGS**

Groundwater monitoring wells were installed using 2-inch schedule 40-PVC well screens and risers. Well screens are 0.010 slot in screen size and come in 10-ft lengths. Wells were installed by truck mounted drill rig utilizing a 6" hollow stem auger. Well screens were centered approximately at the soil / groundwater interface. Silica sand was used to secure the well screen and was added to the boring hole upon placement of the well screen and casing. Silica sand was added to a height of 2 vertical feet above the well screen. A total of two vertical feet of hydrated bentonite clay was added on top of the sand. The remainder of the boring was filled with sand and native material.

LOG OF MONITORING WELL MW-2

Project:	Airport Way Professional Building	**Casing Top Elevation:**	437.41'
Address:	1406 Kellum St, Fairbanks, AK	**Hole Depth:**	18' bgs
Drill Dates:	9/20/2016-9/21/2016	**Hole Diameter:**	6"
Drill Rig:	6" Hollow Stem Auger (0-8' bgs) and Split Spoon (8-17' bgs)	**Well Casing:**	2-inch Schedule 40 PVC
Log By:	Alyson McPhetres	**Groundwater Level:**	11.01' below TOC (Elev. 426.40')

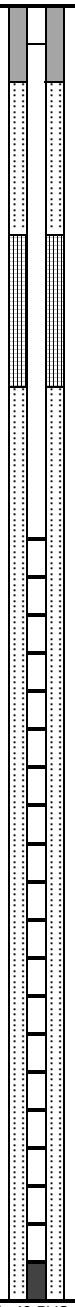
Soil Sample	Sample Depth	Sample Date	Blow Counts (N Value)	Field PID (ppm)	Depth, feet bgs	USCS	Description
							Top of Casing (TOC)
				0.3			
				0.2	2		
				0.4	4	GW	Sandy Gravel
				0.0	6		
					8		
			3,2,3,2	0.0			Gravelly Sand
					10	SW	
AWPB-916-03 AWPB-916-04	10-11.5' bgs	9/21/2016	2,3,3,3	0.1		▽	Sand
							Water encountered at 11.5'
					12		Sand
					14		
					16		
					18		**END OF BOREHOLE AT 18' BGS**

Groundwater monitoring wells were installed using 2-inch schedule 40-PVC well screens and risers. Well screens are 0.010 slot in screen size and come in 10-ft lengths. Wells were installed by truck mounted drill rig utilizing a 6" hollow stem auger. Well screens were centered approximately at the soil / groundwater interface. Silica sand was used to secure the well screen and was added to the boring hole upon placement of the well screen and casing. Silica sand was added to a height of 2 vertical feet above the well screen. A total of two vertical feet of hydrated bentonite clay was added on top of the sand. The remainder of the boring was filled with sand and native material.

LOG OF MONITORING WELL MW-3

Project:	Airport Way Professional Building	**Casing Top Elevation:**	436.98'
Address:	1406 Kellum St, Fairbanks, AK	**Hole Depth:**	17' bgs
Drill Dates:	9/20/2016	**Hole Diameter:**	6"
Drill Rig:	6" Hollow Stem Auger	**Well Casing:**	2-inch Schedule 40 PVC
Log By:	Alyson McPhetres	**Groundwater Level:**	10.62' below TOC (Elev. 426.36')

Soil Sample	Sample Depth	Sample Date	Blow Counts (N Value)	Field PID (ppm)	Depth, feet bgs	USCS	Description
				0.0	0	GW	Top of Casing (TOC)
							Sandy Gravel
				0.1	2	SM	Silty, fine sand
				0.2	4		
					6	SW	Fine Sand
				0.2		SM	Silty, fine sand
				0.0	8	SW	Fine sand
					10		Sand
AWPB-916-01	10-12' bgs	9/20/2016		0.0			Water encountered 11' bgs
					12		Sand
					14		
					16		**END OF BOREHOLE AT 17' BGS**



Groundwater monitoring wells were installed using 2-inch schedule 40-PVC well screens and risers. Well screens are 0.010 slot in screen size and come in 10-ft lengths. Wells were installed by truck mounted drill rig utilizing a 6" hollow stem auger. Well screens were centered approximately at the soil / groundwater interface. Silica sand was used to secure the well screen and was added to the boring hole upon placement of the well screen and casing. Silica sand was added to a height of 2 vertical feet above the well screen. A total of two vertical feet of hydrated bentonite clay was added on top of the sand. The remainder of the boring was filled with sand and native material.

Legend

Legend for Graphic Log


Gravel (GW/GP)


Silty Gravel (GM)


Clayey gravel (GC)


Sand (SW/SP)


Silty Sand (SM)


Clayey Sand (SC)


Organic silt and clays of low to medium plasticity, sandy organic silts (OL)


Organic silts and clays of high plasticity,sandy organic silts and clays (OH)


Lean Clay (CL)


Fat Clay (CH)


Ice


Frozen Gravel (GW/GP)


Frozen Silty Gravel (GM)


Frozen Clayey Gravel (GC)


Frozen Sand (SW/SP)


Frozen Silty Sand (SM)


Frozen Clayey Sand (SC)


Frozen Inorganic silt, clayey silt with low to medium plasticity (ML)


Frozen Inorganic silt, micaceous or diatamaceous soil, elastic silts (MH)


Frozen Lean Clay (CL)


Frozen Fat Clay (CH)

Legend for Well Diagram


Prepacked well screen


Slotted Casing


Casing


Gravel


Sand


Bentonite Seal


Bottom cap


Concrete

Appendix F

Field Notes and Field Data Sheets

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SINCE 1916

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CONTENTS

PAGE	REFERENCE	DATE

TUES 9/20/2016

0815 ARRIVE ONSITE - D. STAHL ARES ENV SCI
MEET W/ RON BRUMHILLER OF THE DRILLING CO.
- REVIEW UTILITY LOCATES
SET UP ON MW3 - LOCATION
CALIBRATE PID #590-704017 TO 0.0 / 100 PPM W/ AIR / 150 ISOBUTYLENE

MW3 - 1.75" OF ASPHALT

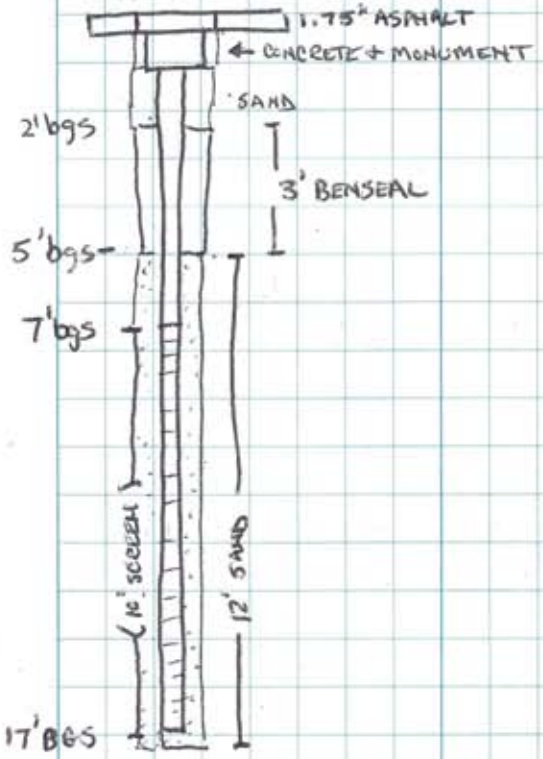
DEPTH	PID	SOIL DESCRIPTION	RECOVERY
0-2	0.0	Sandy Gravels	37"
2-4	0.1	SILTY FINE SAND	
4-6	0.2	SILTY FINE SAND	34"
6-8	0.2	FINE SAND (6-7) SILTY FIN SAND (7-8)	
8-10	0.0	FINE SAND	32"
10-12	0.0	SAND	
		WATER @ 11'	

0940 AWPB-916-01 - BTEX, GRO, DRO
COLLECTED @ 10-12' BGS @ SWI

WEATHER: OVERCAST 39 — 59°F WIND 0-5

9/20/2016

MW 3



9/20/2016

SET UP ON MW-1 LOCATION

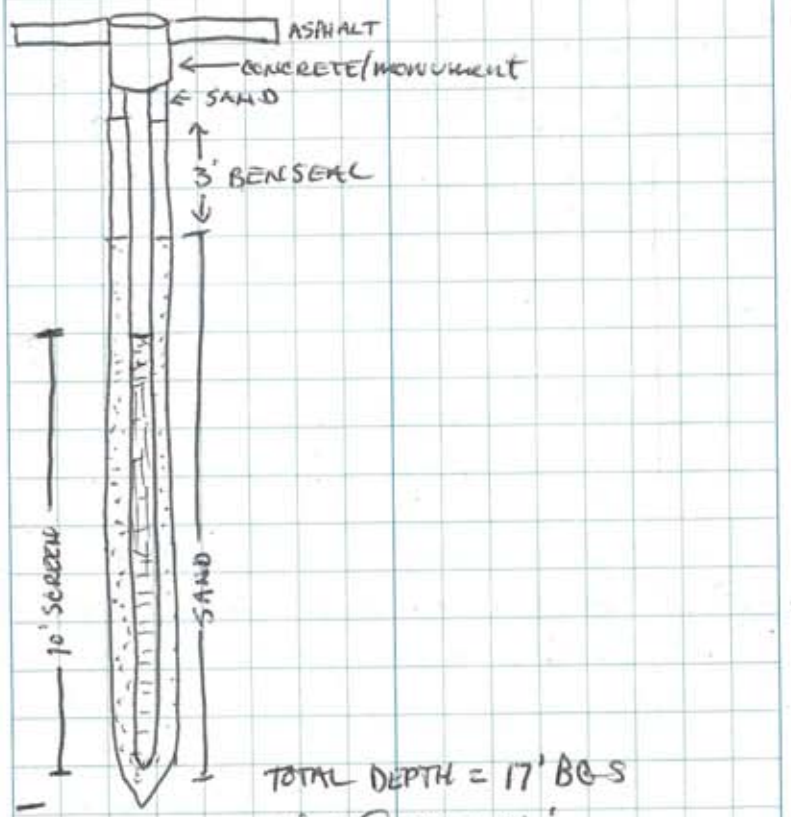
MW-1

DEPTH	PID	SOIL DESCRIPTION	RECOVERY
0-2	0.0	0-3 - SANDY GRAVEL	36"
2-4	0.0	3-4 - BROWN SILTY LOAM	
4-6	0.0	4-4.5 SILTY LOAM	44"
6-8	0.1	4.5-8 SAND	
8-10	0.0	SAND/w occasional	36"
10-12	0.0	Round Gravel	
		WATER @ 10.5-11' BGS	

1350 - AWPB-916-02 BTEX/GRO, DRO @ 9.5-11' bgs @ SW

9/20/2016

MW-1



Rite in the Rain

9/20/2016

SET UP ON MW-2 LOCATION (SOURCE AREA WELL)

MW-2

DEPTH	PID	SOIL DESCRIPTION	REC
0-2	0.3	Sandy Gravels	3"
2-4	0.2		
4-6	0.4	Sandy gravel	35"
6-8	0.0		
8-10	∫	∫	∫
10-12			

COULD NOT GET RECOVERY WITH GEO PROBE DUE TO GRAVELS + COLAPSING HOLE WILL RETRY W/ SPLIT SPOONS TOMORROW

1815 OFFSITE

9/21/2016

0800 ARRIVE ONSITE - SET UP CONES
LOCATE OWNERS OF VEHICLES THAT NEED TO BE MOVED
D STAHL ARES - ENV SCI
WEATHER: OVERCAST 38°F - °F WINDS 15MPH
CALIBRATE PID # 590-904017 TO 0.0 W FRESHAIR THEN TO 100 PPM W/ ISOBUTYLENE

MW 2

DEPTH	PID	SOIL DESCRIPTION	BLOWS	REC
8-10	0.0	GRAVELY SAND	3,2,3,2	24"
10-12	0.1	SAND	2,3,3,3	23"

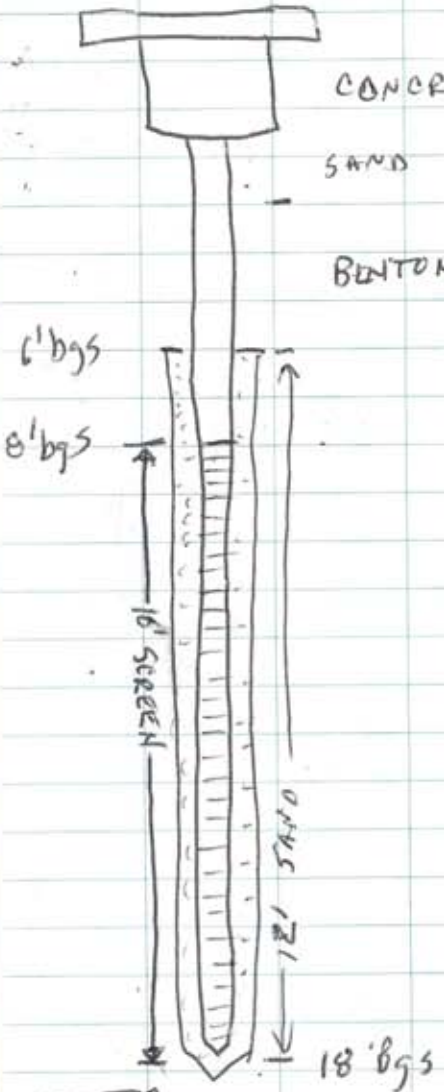
WATER @ 11.5 SWL

0950 AWPB-916-03-BTEX/GRO DRO PAH (9) 10-11.5

1000 AWPB-916-04 - BLIND DUP of AWPB-916-03

09/21/16

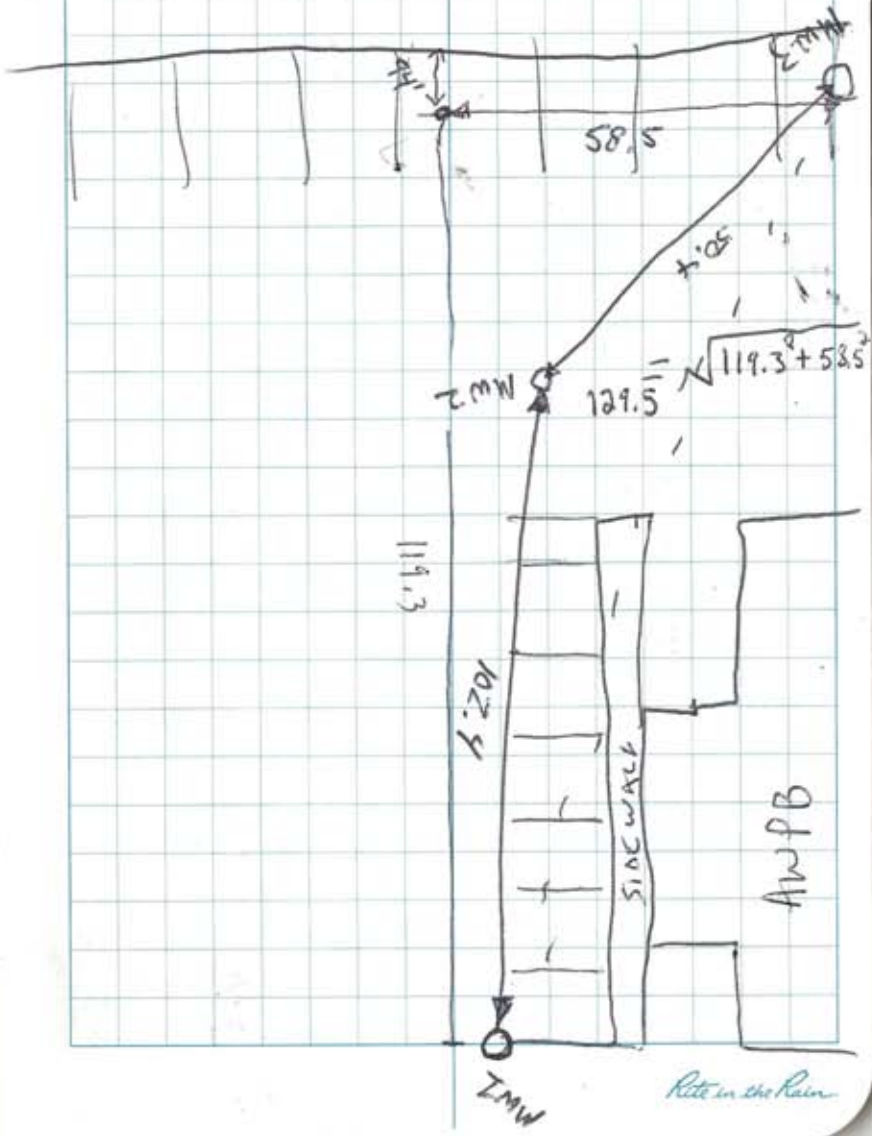
MW-2



1230 OFFSITE

09/30/2016

1220 ARRIVE ONSITE - D. STAHL - ARES ENV SCI & J. GREESEHOVER



9/30/2016

SURVEY TO TOP OF CASING Survey 1

MW3 = 6.00'
MW2 = 5.59'
MW1 = 5.33'

Survey 2 To Top of Casing (move tripod)

		CASING DEPTH	DTW
MW3	= 6.81	16.59	10.62
MW2	= 5.57'	17.60	11.01
MW1	5.33'	16.55	11.23

1348 - BEGIN DEVELOPING MW3 - LGHT BROWN/TAN SILTY PURGE H2O NO ODOR OR SHEEN APPROX 5 gallons purged

1430 - Begin developing MW1 - Light brown TAN SILTY PURGE H2O - NO ODOR OR SHEEN APPROX 5 gallons purged

1520 Begin developing MW2 - light tan purgwater very little silt, no sheen, NO ODOR APPROX 2.5 gallons purged

1550 OFFSITE

8/15/2017

0950 - ARRIVE ONSITE - D. STAHL & C. ARONSON

1000 BEGIN TO SET UP ON MW-3

1050 START PURGING MW-3 W/ LOW FLOW + YSI METER

1102 PARAMETERS ARE STABLE

* 1105 MW3-817 - BTEX, GRO, DRO

1125 MOVE TO MW-1

1143 Begin Purging Low flow

1205 WELL STABLE

* 1210 MW-1-817 - BTEX GRO, DRO

1230 MOVE TO MW-2

1247 Begin Purging MW-2 (Low Flow)

1311 WELL STABLE

1315 MW2-817 . BTEX, GRO, DRO

1350 ~~NEW~~ DUP-817 - BLIND FIELD DUPLICATE OF MW2-817

1410 CLEAN UP GEAR + OFFSITE

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

Ground Water Monitoring Well Data Sheet

Site Name: AIRPORTWAY PROF BUILDING	Well/ Sample ID: MW1 MW1-1016
Location: KELVIN ST	Initial Depth to Water (DTW): 11.70
Client: AWPB	Total Well Depth (TD): 16.54
Sampler: DUSTIN STAHL	Well Diameter:
Date: 10/14/16	Purge Method: PERI
Sample Method: LO FLOW	Flow Rate: 0.3 L/MIN

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
1312	6.63	1.055	9.25	7.54	228.9	11.71	1.3	
1315	6.70	1.053	9.15	7.50	226.0	11.70	2.2	
1318	6.73	1.053	8.99	7.55	225.9	11.70	3.1	

Did Well Dewater?	Start Purge Time: 1305	DTW prior to sample:
Odor: NO	Stop Purge Time:	Start Sample Time: 1305
Color: CLOUDY LIGHT YELLOW	Total Purge Volume:	Total Sample Volume:
Water Quality Meter Model:	Serial ID:	
Water Level Indicator Model:	Serial ID:	

Notes: NO FUEL (NAPL) PRESENT VIA HERRON H2O/OIL INTERFACE PROBE

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

Ground Water Monitoring Well Data Sheet

Site Name: AIRPORT WAY PROF BUILDING	Well/ Sample ID: MW2 / MW2-1016 + DUP-1016
Location: KELLUM ST	Initial Depth to Water (DTW): 12.45
Client: ~~APPD~~ AWPB	Total Well Depth (TD): 17.60
Sampler: DUSTIN STANC	Well Diameter: 2"
Date: 10/14/16	Purge Method: PERI
Sample Method: LOW FLOW	Flow Rate: 0.3 L/min

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
1453	6.82	0.846	3.58	6.59	203.2	12.45	2.0	
1456	6.82	0.846	3.45	6.63	203.1	12.45	2.9	
1459	6.81	0.846	3.38	6.62	201.3	12.45	3.8	STABLE

Did Well Dewater?	Start Purge Time: 1445	DTW prior to sample:
Odor: NONE	Stop Purge Time:	Start Sample Time: 1500
Color: CLEAR	Total Purge Volume:	Total Sample Volume:
Water Quality Meter Model:		Serial ID:
Water Level Indicator Model:		Serial ID:

Notes: NO NAPL PRESENT

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

Ground Water Monitoring Well Data Sheet

Site Name: AIRPORTWAY PROF BUILDING	Well/ Sample ID: MW3 / MW3-1016
Location: KELLUM WAY	Initial Depth to Water (DTW): 11.05
Client: AWPB	Total Well Depth (TD): 16.51
Sampler: DUSTIN STAHL	Well Diameter: 2"
Date: 10/14/16	Purge Method: PERI
Sample Method: LO FLOW	Flow Rate: 0.3 L/min

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
1400	6.97	0.802	7.66	5.91	208.8		1.2	
1403	6.94	0.796	7.10	5.91	210.9		2.1	
1406	6.93	0.796	7.12	5.91	212.3		3.0	

Did Well Dewater?	Start Purge Time: 1355	DTW prior to sample:
Odor: No	Stop Purge Time:	Start Sample Time: 1410
Color: CLOUDY LIGHT GRAY	Total Purge Volume:	Total Sample Volume:
Water Quality Meter Model:		Serial ID:
Water Level Indicator Model:		Serial ID:

Notes: NO NAPL ON WATER TABLE

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

Ground Water Monitoring Well Data Sheet

Site Name: MW-1 / Airport Runway Prof. Blvd.	Well/ Sample ID: MW-1 / MW1-817
Location: 1405 Well Way	Initial Depth to Water (DTW): 13.0'
Client:	Total Well Depth (TD): 16.50'
Sampler: CA + DS	Well Diameter: 2"
Date: 8/15/17	Purge Method: pev.
Sample Method: Low Flow	Flow Rate: 0.3 L/min

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
1143	6.86	0.962	4.02	7.12	181.6	13.0	—	pre-purged 0.5 gal
1149	6.87	0.963	3.93	6.78	176.3	13.0	0.9L	
1152	6.90	0.950	3.58	6.93	174.5	13.0	1.8L	
1155	6.91	0.943	3.43	7.03	173.7	13.0	2.7L	
1158	6.92	0.936	3.21	7.35	172.0	13.0	3.6L	
1202	6.94	0.934	3.02	7.74	170.5	13.0	4.5L	
1205	6.93	0.936	3.01	7.82	169.6	13.0	5.6L	stable

Did Well Dewater?	Start Purge Time: 1143	DTW prior to sample: 13.0'
Odor: None	Stop Purge Time: 1206	Start Sample Time: 1210
Color: CLEAR	Total Purge Volume:	Total Sample Volume:
Water Quality Meter Model: YSI 556 MPS	Serial ID:	Same as MW-3
Water Level Indicator Model: Same as MW-3	Serial ID:	Same as MW-3

Notes:

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ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

Ground Water Monitoring Well Data Sheet

Site Name:	Airport Way Prof. Bldg.	Well/ Sample ID:	MW-2 / MW2-817, DUP-817
Location:	1405 Kellum	Initial Depth to Water (DTW):	12.77'
Client:		Total Well Depth (TD):	17.62'
Sampler:	CAT BS	Well Diameter:	2"
Date:	08/15/2017	Purge Method:	peri
Sample Method:	Low flow	Flow Rate:	0.3L/min

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
1247	6.88	0.701	3.90	8.13	41.5	12.77	—	pre-purged 0.5gal
1250	6.85	0.695	3.38	7.88	37.6	12.77	0.9L	
1253	6.83	0.690	3.92	7.84	31.5	12.77	1.8L	
1256	6.84	0.683	3.85	7.59	26.6	12.77	2.7L	
1259	6.85	0.671	5.16	7.45	21.0	12.77	3.6L	
1302	6.85	0.685	6.08	6.62	18.8	12.77	4.5L	
1305	6.83	0.666	4.55	7.06	18.9	12.77	5.4L	
1308	6.86	0.667	4.05	7.26	16.4	12.77	6.3L	
1311	6.87	0.667	3.82	7.28	14.8	12.77	7.2L	stable

Did Well Dewater?	Start Purge Time: 1239	DTW prior to sample: 12.77'
Odor: ~~None~~ slight	Stop Purge Time:	Start Sample Time: 1315 DUP 1330
Color: CLEAR	Total Purge Volume:	Total Sample Volume:
Water Quality Meter Model:	Serial ID:	
Water Level Indicator Model:	Serial ID:	

Notes: Duplicate collected on this well (MW-2)

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

Ground Water Monitoring Well Data Sheet

Site Name: Airport Way Prof. Bldg.	Well/ Sample ID: MW-3 / ~~MW-3~~ MW3-817
Location: 1405 Kellum	Initial Depth to Water (DTW): 12.41'
Client:	Total Well Depth (TD): 16.52'
Sampler: CA + BS	Well Diameter: 2"
Date: 08/15/2017	Purge Method: peri
Sample Method: Low flow	Flow Rate: 0.3 L/min

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
10:50	6.74	0.741	5.87	5.9	178.5	12.41	—	Pre-purge 1 gal
10:53	6.76	0.723	4.93	6.15	175.8	12.41	0.9 L	
10:56	6.76	0.725	~~4.65~~	5.53	176.2	12.41	1.8 L	
10:59	6.77	0.725	4.28	5.58	173.2	12.41	2.7 L	
11:02	6.77	0.721	4.10	5.82	177.6	12.41	3.6 L	stable

Did Well Dewater?	Start Purge Time: 1050	DTW prior to sample:
Odor: NONE	Stop Purge Time: 11:02	Start Sample Time: 1105
Color: CLEAR	Total Purge Volume: 1 gall / 3.6 L	Total Sample Volume:
Water Quality Meter Model: YSI 556 MPS		Serial ID: 11H100848
Water Level Indicator Model: SOLINST 101		Serial ID: 223198

Notes: