2018 Groundwater Monitoring Report

Airport Way Professional Building
1406 Kellum Street, Fairbanks, Alaska

January 2019

Prepared for:

Airport Way Professional Building LLC

Prepared by:

Alaska Resources and Environmental Services, LLC.

3520 International Street
Fairbanks, Alaska 99701

Prepared by:

Dustin Stahl
Project Manager / Environmental Specialist

INTRODUCTION

This report was prepared on behalf of Airport Way Professional Building LLC, who has contracted with Alaska Resources & Environmental Services (ARES) to perform groundwater monitoring associated with the known UST release that occurred on the subject property. The ADEC file number for the site is 102.38.143.

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 and 2). 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 confirmed 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.

In September of 2016, ARES and the Drilling Company reinstalled three permanent groundwater monitoring wells. Analytical soil samples were collected using a Geoprobe truck-mounted direct push drill unit, and analyzed for DRO by method AK 102, BTEX compounds by method EPA 8021B, and PAH by method EPA 8270D. ARES then developed the groundwater monitoring wells and collected analytical groundwater in October 2016. The groundwater samples were analyzed for GRO by method AK101, DRO by method AK 102, and BTEX compounds by method EPA 8021B. ARES also completed a closed loop groundwater elevation survey to determine groundwater flow direction. It was determined that the groundwater flow direction was 45 degrees west of North with a hydraulic gradient of 0.00079 vertical ft/horizontal ft.

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).

In August of 2017, ARES performed groundwater sample collection. The groundwater samples were analyzed for GRO by method AK101, DRO by method AK 102, and BTEX compounds by method EPA 8260C. 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. 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 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.

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:

- 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 8260C, and diesel range organics (DRO) by method AK 102.

- Completed a closed loop groundwater elevation survey and calculated groundwater gradient and groundwater flow direction.
- Used groundwater data to determine if contaminants are present in groundwater above ADEC cleanup levels and if contaminants are migrating from the source area; and
- Documented field activities and prepared Final Report.

GROUNDWATER MONITORING WELL SAMPLING

Groundwater Monitoring Well Sampling and Analysis (General Procedure)

Groundwater monitoring wells MW1, MW2, and MW3 and their locations relative to each other and the project site are found in Figure 3. Wells were sampled in order of least likely to be contaminated to most likely to be contaminated.

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).

A bladder pump with new disposable polyethylene tubing, new disposable polyethylene bladders, and new nitrile gloves were used during the 2018 sampling event. Water and casing depth measurements were collected using a Solinst Model 101 Water depth meter SN: 223198. 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 556 SN: 11H100848. 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 0.45 L/min during purging and sampling. The maximum draw down of all wells during purging was 0.04'.

The following water quality parameters are considered stable when three successive readings, collected 3 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 8260C;
- 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 indicating that the water was below ADEC cleanup levels, the water was released to the ground surface.

Field Observations

During the 2018 groundwater sampling event, no odor or color was observed in the groundwater purged from the monitoring wells.

Analytical Results

All three monitoring wells were sampled and analyzed for BTEX by EPA method 8260C, GRO by method AK101, and DRO by method AK102 by TestAmerica Laboratories, Inc., Seattle, WA. A historical summary of groundwater analytical results are included in Table 1. Complete laboratory results are included in Appendix B.

Table 1: Groundwater Analytical Results Historical Summary

Sample Location	Sample ID	Date Sampled	EPA Method 8021B				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	38.9 J	ND [183]
	MW1-817	08/15/2017	ND [0.093]	ND [0.31]	ND [0.20]	ND [0.44]	ND [120]	ND [81]
	MW1-718	07/13/2018	ND [0.093]	ND [0.31]	ND [0.20]	ND [0.44]	ND [36]	ND [92]
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[2]	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[2]	08/15/2017	ND [0.093]	ND [0.31]	ND [0.20]	ND [0.44]	ND [120]	410
	MW2-718	07/13/2018	ND [0.093]	ND [0.31]	ND [0.20]	ND [0.44]	ND [36]	300
	D-718[2]	07/13/2018	ND [0.093]	ND [0.31]	ND [0.20]	ND [0.44]	ND [36]	350
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
	MW3-718	07/13/2018	ND [0.093]	ND [0.31]	ND [0.20]	ND [0.44]	ND [36]	ND [91]
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 October, 2018.
[2]=The sample is a duplicate of the sample listed directly above it in the table
J - Sample detected above MDL but below MRL. Reported concentration is considered an estimate.
Results above ADEC Regulatory Limit in **Bold**.
ND – Not detected above reporting limit

QUALITY ASSURANCE AND QUALITY CONTROL

Blind Duplicate Samples

Field quality control (QC) procedures for this project included the collection and analysis of one blind field duplicate sample. One blind field duplicate water sample was collected. The blind field duplicate sample was analyzed for the same compounds as the original sample. The QC sample was 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 2 below for all analytes with calculable RPDs.

Table 2: Relative Percent Difference Calculations in Water

Sample ID / Duplicate ID	Compound	Sample Concentration (µg/L)	Duplicate Concentration (µg/L)	RPD (Limit < 30%)
MW2-718 / D-718	DRO	300	350	15.4%

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 water analysis is < 30%. The blind field duplicate RPD calculation 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 calculation.

Trip Blank Samples

Field quality control (QC) procedures for this project included the analysis of one water trip blank sample which accompanied the samples in the field. The trip blank sample was 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 trip blank sample for this project was analyzed for GRO by method AK 101 and BTEX by method 8260C. No compounds were detected above the MRL in the water trip blank sample. 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 2018) 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 Seattle, WA. The analytical laboratory reports, chain-of-custody records, and ADEC Lab Quality Checklists are included in Appendix B.

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 the TestAmerica Laboratory Report 580-78913-1 were found to be within accepted limits.

CONCLUSIONS AND RECOMMENDATIONS

Groundwater analytical results for all three wells from the July 13, 2018 sampling event were non-detect or below ADEC cleanup levels for all analytes tested. DRO was detected in groundwater collected from MW-2 at a concentration of 300µg/L (blind field duplicate, D-718, had a DRO concentration of 350µg/L). Analytical results indicate that all collected groundwater samples are below ADEC cleanup levels for GRO and BTEX compounds.

A comparison of the analytical results from historical sampling events indicates a three-year trend of decreasing concentrations of all tested analytes.

ARES recommends the following:

- ARES recommends that annual groundwater monitoring be concluded. No additional sampling events should be required. Following ADEC approval, groundwater monitoring wells at the site should be decommissioned according to ADEC specification;
- ARES also recommends that ADEC grant Cleanup Complete-Institutional Controls status to the site;
- 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.

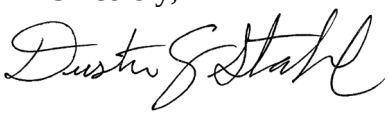
The data presented in this report should be considered representative of the time of our site observations and sample collection. Changes in site conditions can occur with time because of natural forces or human activity. ARES reserves the right to modify or alter conclusions and recommendations should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

Sincerely,



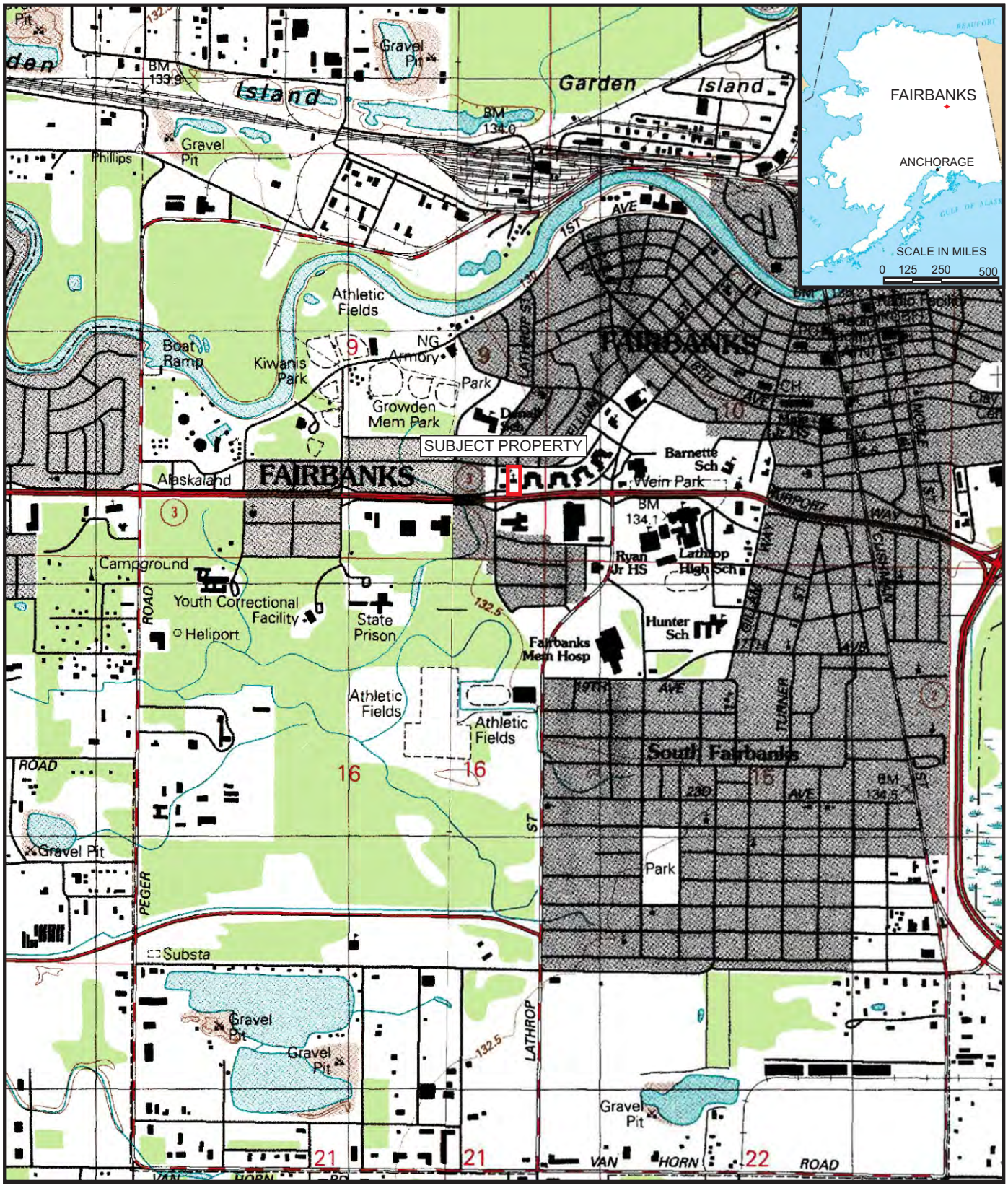
Dustin Stahl
Project Manager / Environmental Specialist
Alaska Resources and Environmental Services, LLC

Enclosure:

Appendix A – Figures
Appendix B – Analytical Water Laboratory Results and ADEC Lab Quality Checklist
Appendix C – Field Notes and Well 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	FIGURE 1
	DRAWN: JDG			
	PROJECT: GROUNDWATER WELL MONITORING REPORT 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 WELL MONITORING REPORT AIRPORT WAY PROFESSIONAL BUILDING 1406 KELLUM STREET, FAIRBANKS, AK	N W E S		

WELL AND ANALYTICAL SAMPLE LOCATION MAP	DATE: 12/11/2018	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: CEA			
	PROJECT: GROUNDWATER WELL MONITORING REPORT 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 REPORT-AIRPORT WAY PROFESSIONAL BUILDING 1406 KELLUM STREET, FAIRBANKS, AK		N W E S		

Appendix B

Analytical Water Results

&

ADEC Lab Quality Checklist

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-78913-1
Client Project/Site: Airport Way Professional Building

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

Attn: Lyle Gresehover

Kristine D. Allen

Authorized for release by:
7/26/2018 12:17:09 PM
Kristine Allen, Manager of Project Management
(253)248-4970
kristine.allen@testamericainc.com

Designee for

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

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 580-78913-1

Laboratory: TestAmerica Seattle

Narrative

Job Narrative
580-78913-1

Comments
No additional comments.

Receipt
The samples were received on 7/17/2018 2:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.8º C.

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

GC Semi VOA
Method(s) AK102 & 103: Detected hydrocarbons appear to be due to heavily weathered diesel and/or a light weight oil. MW2-718 (580-78913-3) and D-718 (580-78913-4)

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

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

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

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

TestAmerica Job ID: 580-78913-1

Client Sample ID: MW1-718
Date Collected: 07/13/18 13:15
Date Received: 07/17/18 14:15

Lab Sample ID: 580-78913-1
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			07/23/18 14:06	1
Ethylbenzene	ND		1.0	0.20	ug/L			07/23/18 14:06	1
m,p-Xylene	ND		2.0	0.28	ug/L			07/23/18 14:06	1
o-Xylene	ND		1.0	0.16	ug/L			07/23/18 14:06	1
Toluene	ND		1.0	0.31	ug/L			07/23/18 14:06	1
Xylenes, Total	ND		3.0	0.44	ug/L			07/23/18 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 125*		*07/23/18 14:06*	*1*
4-Bromofluorobenzene (Surr)	*103*		*69 - 120*		*07/23/18 14:06*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*07/23/18 14:06*	*1*
Toluene-d8 (Surr)	*92*		*80 - 120*		*07/23/18 14:06*	*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	36	ug/L			07/23/18 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*68.7 - 141*		*07/23/18 14:06*	*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	0.092	mg/L		07/23/18 10:48	07/23/18 16:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*96*		*50 - 150*	*07/23/18 10:48*	*07/23/18 16:19*	*1*
n-Triacontane-d62	*95*		*50 - 150*	*07/23/18 10:48*	*07/23/18 16:19*	*1*

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

TestAmerica Job ID: 580-78913-1

Client Sample ID: MW3-718
Date Collected: 07/13/18 14:15
Date Received: 07/17/18 14:15

Lab Sample ID: 580-78913-2
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			07/23/18 14:27	1
Ethylbenzene	ND		1.0	0.20	ug/L			07/23/18 14:27	1
m,p-Xylene	ND		2.0	0.28	ug/L			07/23/18 14:27	1
o-Xylene	ND		1.0	0.16	ug/L			07/23/18 14:27	1
Toluene	ND		1.0	0.31	ug/L			07/23/18 14:27	1
Xylenes, Total	ND		3.0	0.44	ug/L			07/23/18 14:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 125*		*07/23/18 14:27*	*1*
4-Bromofluorobenzene (Surr)	*100*		*69 - 120*		*07/23/18 14:27*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*07/23/18 14:27*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*07/23/18 14:27*	*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	36	ug/L			07/23/18 14:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*68.7 - 141*		*07/23/18 14:27*	*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	0.091	mg/L		07/23/18 10:48	07/23/18 16:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*98*		*50 - 150*	*07/23/18 10:48*	*07/23/18 16:37*	*1*
n-Triacontane-d62	*98*		*50 - 150*	*07/23/18 10:48*	*07/23/18 16:37*	*1*

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

TestAmerica Job ID: 580-78913-1

Client Sample ID: MW2-718
Date Collected: 07/13/18 15:40
Date Received: 07/17/18 14:15

Lab Sample ID: 580-78913-3
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			07/23/18 14:49	1
Ethylbenzene	ND		1.0	0.20	ug/L			07/23/18 14:49	1
m,p-Xylene	ND		2.0	0.28	ug/L			07/23/18 14:49	1
o-Xylene	ND		1.0	0.16	ug/L			07/23/18 14:49	1
Toluene	ND		1.0	0.31	ug/L			07/23/18 14:49	1
Xylenes, Total	ND		3.0	0.44	ug/L			07/23/18 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 125*		*07/23/18 14:49*	*1*
4-Bromofluorobenzene (Surr)	*94*		*69 - 120*		*07/23/18 14:49*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*07/23/18 14:49*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*07/23/18 14:49*	*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	36	ug/L			07/23/18 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*68.7 - 141*		*07/23/18 14:49*	*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)	**0.30**		0.25	0.091	mg/L		07/23/18 10:48	07/23/18 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*89*		*50 - 150*	*07/23/18 10:48*	*07/23/18 16:56*	*1*
n-Triacontane-d62	*90*		*50 - 150*	*07/23/18 10:48*	*07/23/18 16:56*	*1*

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

TestAmerica Job ID: 580-78913-1

Client Sample ID: D-718
Date Collected: 07/13/18 15:50
Date Received: 07/17/18 14:15

Lab Sample ID: 580-78913-4
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			07/23/18 15:56	1
Ethylbenzene	ND		1.0	0.20	ug/L			07/23/18 15:56	1
m,p-Xylene	ND		2.0	0.28	ug/L			07/23/18 15:56	1
o-Xylene	ND		1.0	0.16	ug/L			07/23/18 15:56	1
Toluene	ND		1.0	0.31	ug/L			07/23/18 15:56	1
Xylenes, Total	ND		3.0	0.44	ug/L			07/23/18 15:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 125*		*07/23/18 15:56*	*1*
4-Bromofluorobenzene (Surr)	*104*		*69 - 120*		*07/23/18 15:56*	*1*
Dibromofluoromethane (Surr)	*107*		*80 - 120*		*07/23/18 15:56*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*07/23/18 15:56*	*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	36	ug/L			07/23/18 15:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*68.7 - 141*		*07/23/18 15:56*	*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)	**0.35**		0.25	0.090	mg/L		07/23/18 10:48	07/23/18 17:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*97*		*50 - 150*	*07/23/18 10:48*	*07/23/18 17:15*	*1*
n-Triacontane-d62	*97*		*50 - 150*	*07/23/18 10:48*	*07/23/18 17:15*	*1*

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

TestAmerica Job ID: 580-78913-1

Client Sample ID: Trip Blank
Date Collected: 07/13/18 07:00
Date Received: 07/17/18 14:15

Lab Sample ID: 580-78913-5
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			07/23/18 17:02	1
Ethylbenzene	ND		1.0	0.20	ug/L			07/23/18 17:02	1
m,p-Xylene	ND		2.0	0.28	ug/L			07/23/18 17:02	1
o-Xylene	ND		1.0	0.16	ug/L			07/23/18 17:02	1
Toluene	ND		1.0	0.31	ug/L			07/23/18 17:02	1
Xylenes, Total	ND		3.0	0.44	ug/L			07/23/18 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 125*		*07/23/18 17:02*	*1*
4-Bromofluorobenzene (Surr)	*96*		*69 - 120*		*07/23/18 17:02*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*07/23/18 17:02*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*07/23/18 17:02*	*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	36	ug/L			07/23/18 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*68.7 - 141*		*07/23/18 17:02*	*1*

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

Lab Sample ID: MB 590-17843/5
Matrix: Water
Analysis Batch: 17843

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			07/23/18 09:37	1
Ethylbenzene	ND		1.0	0.20	ug/L			07/23/18 09:37	1
m,p-Xylene	ND		2.0	0.28	ug/L			07/23/18 09:37	1
o-Xylene	ND		1.0	0.16	ug/L			07/23/18 09:37	1
Toluene	ND		1.0	0.31	ug/L			07/23/18 09:37	1
Xylenes, Total	ND		3.0	0.44	ug/L			07/23/18 09:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 125*		*07/23/18 09:37*	*1*
4-Bromofluorobenzene (Surr)	*101*		*69 - 120*		*07/23/18 09:37*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*07/23/18 09:37*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*07/23/18 09:37*	*1*

Lab Sample ID: LCS 590-17843/1003
Matrix: Water
Analysis Batch: 17843

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	10.8		ug/L		108	80 - 120		
Ethylbenzene			10.0	9.82		ug/L		98	80 - 120		
m,p-Xylene			10.0	9.56		ug/L		96	80 - 120		
o-Xylene			10.0	9.52		ug/L		95	80 - 120		
Toluene			10.0	9.98		ug/L		100	80 - 123		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 125*
4-Bromofluorobenzene (Surr)	*96*		*69 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
Toluene-d8 (Surr)	*94*		*80 - 120*

Lab Sample ID: LCSD 590-17843/6
Matrix: Water
Analysis Batch: 17843

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	10.6		ug/L		106	80 - 120	2	25
Ethylbenzene			10.0	9.54		ug/L		95	80 - 120	3	25
m,p-Xylene			10.0	9.52		ug/L		95	80 - 120	0	25
o-Xylene			10.0	9.53		ug/L		95	80 - 120	0	25
Toluene			10.0	9.61		ug/L		96	80 - 123	4	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 125*
4-Bromofluorobenzene (Surr)	*96*		*69 - 120*
Dibromofluoromethane (Surr)	*100*		*80 - 120*
Toluene-d8 (Surr)	*94*		*80 - 120*

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

Lab Sample ID: 580-78913-3 MS
Matrix: Water
Analysis Batch: 17843

Client Sample ID: MW2-718
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	ND		10.0	12.1		ug/L		121	50 - 150
Ethylbenzene	ND		10.0	10.6		ug/L		106	50 - 150
m,p-Xylene	ND		10.0	10.7		ug/L		107	50 - 150
o-Xylene	ND		10.0	10.1		ug/L		101	50 - 150
Toluene	ND		10.0	11.1		ug/L		111	50 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 125*
4-Bromofluorobenzene (Surr)	*95*		*69 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
Toluene-d8 (Surr)	*93*		*80 - 120*

Lab Sample ID: 580-78913-3 MSD
Matrix: Water
Analysis Batch: 17843

Client Sample ID: MW2-718
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	11.2		ug/L		112	50 - 150	7	35
Ethylbenzene	ND		10.0	9.84		ug/L		98	50 - 150	8	35
m,p-Xylene	ND		10.0	9.78		ug/L		98	50 - 150	9	35
o-Xylene	ND		10.0	9.64		ug/L		96	50 - 150	5	35
Toluene	ND		10.0	9.83		ug/L		98	50 - 150	12	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 125*
4-Bromofluorobenzene (Surr)	*99*		*69 - 120*
Dibromofluoromethane (Surr)	*100*		*80 - 120*
Toluene-d8 (Surr)	*91*		*80 - 120*

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

Lab Sample ID: MB 590-17844/5
Matrix: Water
Analysis Batch: 17844

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	36	ug/L			07/23/18 09:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*68.7 - 141*		*07/23/18 09:37*	*1*

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

Lab Sample ID: LCS 590-17844/1004
Matrix: Water
Analysis Batch: 17844

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	1070		ug/L		107	60 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*68.7 - 141*

Lab Sample ID: LCSD 590-17844/1015
Matrix: Water
Analysis Batch: 17844

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	1070		ug/L		107	60 - 120	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*68.7 - 141*

Lab Sample ID: 580-78913-4 MS
Matrix: Water
Analysis Batch: 17844

Client Sample ID: D-718
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	883		ug/L		88	55.6 - 126		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*68.7 - 141*

Lab Sample ID: 580-78913-4 MSD
Matrix: Water
Analysis Batch: 17844

Client Sample ID: D-718
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	825		ug/L		83	55.6 - 126	7	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*68.7 - 141*

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

Lab Sample ID: MB 590-17853/1-A
Matrix: Water
Analysis Batch: 17855

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 17853

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.25	0.090	mg/L		07/23/18 10:48	07/23/18 12:45	1

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

TestAmerica Job ID: 580-78913-1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	94		50 - 150	07/23/18 10:48	07/23/18 12:45	1
n-Triacontane-d62	90		50 - 150	07/23/18 10:48	07/23/18 12:45	1

Lab Sample ID: LCS 590-17853/2-A
Matrix: Water
Analysis Batch: 17855

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 17853

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Diesel Range Organics (DRO) (C10-C25)			1.60	1.63		mg/L		102	75 - 125		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	109		50 - 150
n-Triacontane-d62	105		50 - 150

Lab Sample ID: LCSD 590-17853/3-A
Matrix: Water
Analysis Batch: 17855

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 17853

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)			1.60	1.50		mg/L		94	75 - 125	8	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	103		50 - 150
n-Triacontane-d62	103		50 - 150

Client Sample ID: MW1-718

Lab Sample ID: 580-78913-1

Date Collected: 07/13/18 13:15

Matrix: Water

Date Received: 07/17/18 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	17843	07/23/18 14:06	MRS	TAL SPK
Total/NA	Analysis	AK101		1	17844	07/23/18 14:06	MRS	TAL SPK
Total/NA	Prep	3510C			17853	07/23/18 10:48	MO	TAL SPK
Total/NA	Analysis	AK102 & 103		1	17855	07/23/18 16:19	NMI	TAL SPK

Client Sample ID: MW3-718

Lab Sample ID: 580-78913-2

Date Collected: 07/13/18 14:15

Matrix: Water

Date Received: 07/17/18 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	17843	07/23/18 14:27	MRS	TAL SPK
Total/NA	Analysis	AK101		1	17844	07/23/18 14:27	MRS	TAL SPK
Total/NA	Prep	3510C			17853	07/23/18 10:48	MO	TAL SPK
Total/NA	Analysis	AK102 & 103		1	17855	07/23/18 16:37	NMI	TAL SPK

Client Sample ID: MW2-718

Lab Sample ID: 580-78913-3

Date Collected: 07/13/18 15:40

Matrix: Water

Date Received: 07/17/18 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	17843	07/23/18 14:49	MRS	TAL SPK
Total/NA	Analysis	AK101		1	17844	07/23/18 14:49	MRS	TAL SPK
Total/NA	Prep	3510C			17853	07/23/18 10:48	MO	TAL SPK
Total/NA	Analysis	AK102 & 103		1	17855	07/23/18 16:56	NMI	TAL SPK

Client Sample ID: D-718

Lab Sample ID: 580-78913-4

Date Collected: 07/13/18 15:50

Matrix: Water

Date Received: 07/17/18 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	17843	07/23/18 15:56	MRS	TAL SPK
Total/NA	Analysis	AK101		1	17844	07/23/18 15:56	MRS	TAL SPK
Total/NA	Prep	3510C			17853	07/23/18 10:48	MO	TAL SPK
Total/NA	Analysis	AK102 & 103		1	17855	07/23/18 17:15	NMI	TAL SPK

Client Sample ID: Trip Blank

Lab Sample ID: 580-78913-5

Date Collected: 07/13/18 07:00

Matrix: Water

Date Received: 07/17/18 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	17843	07/23/18 17:02	MRS	TAL SPK
Total/NA	Analysis	AK101		1	17844	07/23/18 17:02	MRS	TAL SPK

Lab Chronicle

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

TestAmerica Job ID: 580-78913-1

Laboratory References:

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 580-78913-1

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	17-024	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	07-31-18
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

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	17-025	12-07-18
Oregon	NELAP	10	4137	12-07-18
Washington	State Program	10	C569	01-06-19

Sample Summary

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

TestAmerica Job ID: 580-78913-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-78913-1	MW1-718	Water	07/13/18 13:15	07/17/18 14:15
580-78913-2	MW3-718	Water	07/13/18 14:15	07/17/18 14:15
580-78913-3	MW2-718	Water	07/13/18 15:40	07/17/18 14:15
580-78913-4	D-718	Water	07/13/18 15:50	07/17/18 14:15
580-78913-5	Trip Blank	Water	07/13/18 07:00	07/17/18 14:15

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

Loc: 580
78913

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

Report To: Lyle Gresehover
Address: ARES, P.O. Box 83050
Email: lyle@ak-res.com
Phone: (907) 374-3226 Fax: (907)374-3219

Invoice To: ARES, P.O. Box 83050, Fairbanks, Alaska 99708

P.O. Number:

Laboratory Name: Test America, Inc
Address: 57755 8th St. East, Tacoma, WA 98424
Phone: 253.922.2310

Turnaround Request
In Business Days

Organic & Inorganic Analyses
15 | 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

Preservative: HCL | HCL | HCL

Requested Analyses

	Sample Identification	Sampling Date	Time	AK 102 DRO	AK GRO 101	8260C BTEX								Matrix (W,S,O)	# of Cont.	Location / Comments	Lab ID
1	MW1-718	07/13/18	1315	X	X	X								W	8		
2	MW3-718	07/13/18	1415	X	X	X								W	8		
3	MW2-718	07/13/18	1540	X	X	X								W	8		
4	D-718	07/13/18	1550	X	X	X								W	8		
5	Trip Blank	07/13/18	0700		X									W	~~36~~ 6		
6																	
7																	
8																	
9																	
10																	

Released By: Megan Edic — Date: 07/16/2018
Print Name: Megan Edic — Firm: ARES — Time: 1200

Received By: [signature] — Date: 7/17/18
Print Name: Francisco Luna, J. — Firm: TASEA — Time: 1415

Released By: — Date:
Print Name: — Firm: — Time:

Received By: — Date:
Print Name: — Firm: — Time:

Additional Remarks:
Cooler-071618-01(V): MW1, MW2, MW3, D, TRIP BLANK

Temp:

Page 1 of 1

COC REV 02-2008

580-78913 Chain of Custody

Therm. ID: A2 Cor: 5.8 ° Unc: 5.7 °
Cooler Dsc: Lg Blue
Packing: Bubble
Cust. Seal: Yes X No
Wet/Packs/Dry Ice/None

FedEx:
UPS:
Lab Cour: X
Other:

Login Sample Receipt Checklist

Client: Alaska Resources & Environment

Job Number: 580-78913-1

Login Number: 78913

List Source: TestAmerica Seattle

List Number: 1

Creator: Gall, Brandon A

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").	False	Headspace larger than 1/4" in one vial, one vial with accpt. headspace
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Alaska Resources & Environment

Job Number: 580-78913-1

Login Number: 78913
List Number: 2
Creator: Kratz, Sheila J

List Source: TestAmerica Spokane
List Creation: 07/19/18 02:04 PM

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	#478459
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	1.2 IR004
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?	N/A	Received project as a subcontract.
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	No analysis requiring residual chlorine check assigned.

Login Sample Receipt Checklist

Client: Alaska Resources & Environment

Job Number: 580-78913-1

Login Number: 78913
List Number: 3
Creator: Kratz, Sheila J

List Source: TestAmerica Spokane
List Creation: 07/19/18 02:05 PM

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	#478459
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	1.2 IR004
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?	N/A	Received project as a subcontract.
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	No analysis requiring residual chlorine check assigned.

Laboratory Data Review Checklist

Completed By:

Caleb Aronson

Title:

Environmental Specialist

Date:

December 11, 2018

CS Report Name:

Airport Way Professional Building 2018 Groundwater Monitoring Report

Consultant Firm:

Alaska Resources and Environmental Services

Laboratory Name:

TestAmerica Laboratories, Inc., Seattle, WA

Laboratory Report Number:

580-78913-1

ADEC File Number:

102.38.143

Hazard Identification Number:

4360

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:

2. Chain of Custody (CoC)

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

(•) Yes ( ) No

Comments:

b. Correct Analyses requested?

(•) Yes ( ) No

Comments:

3. Laboratory Sample Receipt Documentation

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

(•) Yes ( ) No

Comments:

The temperature of the cooler at receipt was 5.8°C.

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:

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:

One vial had headspace greater than ¼".

e. Data quality or usability affected?

( ) Yes (●) No

Comments:

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:

Not applicable

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

(●) Yes ( ) No

Comments:

No affect

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:

Not applicable

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:

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:

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

( ) Yes (•) No

Comments:

v. Data quality or usability affected?

Comments:

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:

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:

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

( ) Yes (●) No

Comments:

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

Comments:

No affect

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:

Not applicable

iv. Data quality or usability affected?

Comments:

No affect

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

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

(•) Yes ( ) No

Comments:

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

(•) Yes ( ) No

Comments:

iii. All results less than LOQ?

(•) Yes ( ) No

Comments:

iv. If above LOQ, what samples are affected?

◉ Yes ○ No

Comments:

v. Data quality or usability affected?

Comments:

No affect

e. Field Duplicate

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

◉ Yes ○ No

Comments:

ii. Submitted blind to lab?

◉ Yes ○ No

Comments:

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:

RPD = 15.4%

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

Comments:

No affect

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

○ Yes ○ No ◉ Not Applicable

Comments:

i. All results less than LOQ?

◉ Yes ○ No

Comments:

ii. If above LOQ, what samples are affected?

Comments:

iii. Data quality or usability affected?

Comments:

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

a. Defined and appropriate?

◉ Yes ○ No

Comments:

Appendix C

Field Notes and Well Data Sheets

.45
×3
1.35

Alaska Resources and Environmental Services

Ground Water Monitoring Well Data Sheet

Site Name: Airport Way Professional Building	Well/ Sample ID: MW1 / MW1-718
Location: Kellum Ave.	Initial Depth to Water (DTW): 12.13
Client:	Total Well Depth (TD): 16.45
Sampler: D. Stahl, J. Thomas	Well Diameter: 2"
Date: 7-13-18	Purge Method: BLADDER / LOW FLOW
Sample Method: Bladder Pump	Flow Rate: ~~0.3 L/M~~ 0.45 L/m

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
1253	6.99	0.841	6.00	4.55	3.7	12.2	1.35	BROWN CLOUDY H2O + 0.5 gallon AT purge
1256	7.00	0.841	4.64	4.33	1.7	12.2	2.70	
1259	7.02	0.857	4.19	4.27	0.4	12.2	4.05	
1302	7.03	0.834	4.09	4.24	-0.7	12.2	5.40	
1305	7.04	0.827	3.95	4.18	-1.5	12.2	6.75	
1308	7.05	0.822	3.88	4.15	~~-1.9~~ -2.0	12.2	8.10	STABLE
1311								

Did Well Dewater?	Start Purge Time: 1145	DTW prior to sample:
Odor: None	Stop Purge Time: 1308	Start Sample Time: 1315
Color: Clear / light tan in turbidity	Total Purge Volume: 4.41 gallons	Total Sample Volume:
Water Quality Meter Model: YSI 556 MPS		Serial ID: 11H100848
Water Level Indicator Model: SOLINIST 101		Serial ID: 223193

Notes:

Revised 12/16/2015

Alaska Resources and Environmental Services

MW2-718
~~MW~~ D-718

Ground Water Monitoring Well Data Sheet

Site Name: Airport Way Prof. Bldg.	Well/ Sample ID: MW 2 / Dup.
Location: Kellum St	Initial Depth to Water (DTW): 11.86'
Client:	Total Well Depth (TD): 17.62'
Sampler: C. Ayerson	Well Diameter: 2"
Date: 7/13/18	Purge Method: Bladder flow
Sample Method:	Flow Rate: 0.45 L/m

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
1500	7.0	0.765	~~38.9~~ 4.72	6.93	12.7	11.88	1.35L	pre purged 1/2 gal
1503	6.98	0.766	4.47	6.76	9.5	11.9	2.7L	
1506	6.98	0.762	4.17	6.46	8.3	11.92	~~4.05~~ L	
1509	6.99	0.754	3.76	6.18	6.8	11.92	5.4L	
1512	6.99	0.743	3.33	6.99	5.7	11.92	6.75L	
1515	7.00	0.733	3.04	6.03	4.9	11.92	8.10L	
1518	7.01	0.727	2.84	6.02	4.3	11.92	9.45L	
1521	7.00	0.721	2.66	6.01	4.0	11.92	10.80L	
1524	7.00	0.715	2.45	6.23	3.7	11.92	12.15L	
1527	7.01	0.705	2.17	6.41	3.4	11.92	13.5L	
1530	7.01	0.704	2.10	6.34	3.2	11.92	~~14.85~~ L	
1533	7.01	0.698	1.99	6.41	3.1	11.92	16.2L	Stable

Did Well Dewater? NO	Start Purge Time: 1455	DTW prior to sample: 11.86'
Odor: NONE	Stop Purge Time: 1533	Start Sample Time: 1540 & 1550 Dup
Color: CLEAR	Total Purge Volume: 4.2	Total Sample Volume:
Water Quality Meter Model:		Serial ID:
Water Level Indicator Model:		Serial ID:

Notes:

Alaska Resources and Environmental Services

Ground Water Monitoring Well Data Sheet

Site Name: AIRPORT WAY PROF BLD	Well/ Sample ID: MW3 / MW3-718
Location: KELLUM STREET	Initial Depth to Water (DTW): 11.49
Client:	Total Well Depth (TD): 16.46
Sampler: D. STAHL	Well Diameter: 2"
Date: 7/13/18	Purge Method: Bladder / Low Flow
Sample Method:	Flow Rate: 0.45 L/m

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
1359	7.05	0.855	8.50	5.08	11.3	11.52	~~0.45~~ 1.35 L	
1402	7.02	0.852	8.35	4.65	10.3	11.52	2.70	
1405	7.04	0.847	8.11	4.33	9.0	11.52	4.05	
1408	7.06	0.831	8.57	4.15	8.2	11.52	5.4	
1411	7.06	0.831	8.32	4.11	8.0	11.52	6.75 L	Stable

Did Well Dewater?	Start Purge Time: 1345	DTW prior to sample: 11.49
Odor: None	Stop Purge Time:	Start Sample Time: 1415
Color: Colorless	Total Purge Volume: 2.52 gal 6.5	Total Sample Volume:
Water Quality Meter Model:	Serial ID:	
Water Level Indicator Model:	Serial ID:	

Notes: