2016 Groundwater Monitoring Well Report
Formerly Kobuk Feed & Fuel
2751 Picket Place
Fairbanks, Alaska

Prepared for:

Gary Lundgren

Prepared by:

Alaska Resources and Environmental Services, LLC.

April 2018

Prepared by:

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INTRODUCTION

This report was prepared on behalf of Gary Lundgren, who has contracted with Alaska Resources & Environmental Services (ARES) to perform the groundwater investigation associated with the petroleum release (ADEC file #100.26.137). The work was conducted as detailed in the approved Work Plan submitted in September 2008.

The objective of our work was to obtain groundwater sample data near the site of a former petroleum release in order to determine if groundwater contamination exists on the property and/or is migrating off-site. Groundwater samples were collected from monitoring wells MW-1, MW-2, and MW-3 on October 25, 2016 in general accordance with ADEC Oil and Other Hazardous Substances Pollution Control Regulations (18 AAC 75 – amended May 8, 2016) and approved ADEC Work Plan dated September 2008.

SITE BACKGROUND

Site Description

The property located at 2751 Picket Place is an industrial lot of approximately 109,335 square feet in size. The lot contains a gravel parking lot with no structures. The legal description for the site is: Tax Lot 1740 Section 17 Township 1 South Range 1 West. The elevation of the site is 439' above mean sea level.

History

The subject property was formerly a commercial agricultural feed and fuel supply facility referenced as Kobuk Feed and Fuel. It was owned and operated by Ken Ulz, who declared bankruptcy in 1993. A Phase I Site Assessment was reportedly conducted in 1993 by a prospective purchaser and a UST system was identified with fuel reportedly still in the tanks. There had been numerous surface spills and/or releases of fuel product reported at the site with an estimated 620 cubic yards of soil possibly impacted. There was no investigation of subsurface soils associated with potential leaks from the tanks and subsurface piping.

The property was transferred to the Alaska Department of Natural Resources (ADNR) as a result of a failure to fulfill the requirements of an Agriculture Revolving Loan Fund agreement. ADNR then offered the property for sale in 1996 "as is, where is" by sealed competitive bid. The successful bidder was Global Finance and Investment Co. The current records indicate it is now owned by Castle Residence Inns, Inc.

During excavation and removal of the four UST's in May 2007, petroleum-contaminated soils were encountered of which approximately 2,190 cubic yards of contaminated soils were removed and stockpiled on-site for remediation by land farming in accordance with the ADEC approved Work Plan. As confirmed by laboratory results, soil levels for GRO, DRO, and BTEX constituents were generally below ADEC target cleanup levels between the surface and 8' bgs on the sidewalls and end walls for both excavation pits to the north, east, and south following excavation and removal of contaminated soils. The

lateral extent of contamination to the west however could not be determined. Laboratory results indicate petroleum- contaminated soils still remain along the west wall of the excavation. Excavation was forced to cease along the west wall once the property boundary limits were reached on the subject property.

The horizontal extent of contamination for the subject property was undetermined. Soils were excavated to a maximum depth of approximately 10' bgs. The seasonal high groundwater table for the surrounding area is generally 8' bgs. Sample results indicate that petroleum contaminated soils above ADEC target cleanup levels still exist within the vadose zone >8' below ground surface.

Information regarding field activities and initial Release Investigation is included in the ARES report titled *Phase II Environmental Site Assessment/ Release Investigation, Kobuk Feed and Fuel (Former) Property, July 2007.* Information regarding installation of permanent groundwater monitoring is included in the ARES report titled *Groundwater Monitoring Well Report, Kobuk Feed and Fuel Property, November 2008.*

Additional groundwater monitoring events were conducted by Alaska Resources and Environmental Services annually since 2008. A summary of recent and historical groundwater sampling data is included in Table 1 of this report. Trend analysis is included in Appendix B.

Topography

The United States Geological Survey (USGS) Fairbanks Quadrangle (D-2) SW 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 1.5 miles south of the Chena River. Based upon the topographic map of the Fairbanks Quadrangle, the site elevation is approximately 439 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 such as Chena Slough and Chena River typically rises and falls 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 northwest. However, the direction of flow can vary depending upon the stage of the Tanana River. The seasonal high groundwater table for the surrounding area is generally 8' bgs.

Site Hydrology

The groundwater table at the time of sampling was approximately 13.0' bgs. Well elevation measurements collected at the site confirm groundwater flow direction is to the northwest which is consistent with other data obtained in the area.

GROUNDWATER SAMPLING

Scope of Work

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

- Collected groundwater elevations and water quality parameter measurements to include temperature, pH, conductivity, oxidation reduction potential, and dissolved oxygen;
- Collection of groundwater samples and duplicate sample. Samples were analyzed for gasoline range organics (GRO) by method AK 101, diesel range organics (DRO) by method AK 102, benzene, toluene, ethylbenzene and xylenes (BTEX) by method EPA 8260B, volatile organic compounds (VOCs) by method EPA 8260B, and polycyclic aromatic hydrocarbons (PAH) by method EPA 8270DSIM; and
- Data review and report preparation.

Sampling Method

The monitoring wells were developed, purged, and sampled in accordance with the *ADEC Field Sampling Guidance* document dated March 2016 and *ADEC Monitoring Well Guidance* document dated September 2013. The wells were purged and sampled using a QED micro-purge bladder pump with a Well Wizard 3020 compressor and a MP10 controller set at ID 103, 4 cycles per minute (CPM), and an air pressure of 15 PSI. During sampling at each 3 minute interval, the groundwater elevation was measured to 0.010 feet using a Heron Model D-T Interface Meter. A flow rate of between 0.2-0.3 L/min was maintained. Water parameters were recorded to include temperature, pH, conductivity, ORP, dissolved oxygen, and salinity using a YSI 556 MPS multimeter with a flow-through cell. Parameters were collected every three minutes. Once three consecutive parameter measurements were within allowable limits, the well was considered stable.

Once groundwater parameters stabilized, samples were collected in order of decreasing volatility. 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 standard chain of custody procedures.

Purge water was placed in individually labeled 5 gallon buckets with lids and stored off-site pending laboratory results. Purge water from MW-1 was returned to the ground surface. Purge water from MW-2 and MW-3 was transported to OIT for treatment by thermal remediation.

Groundwater samples were collected from MW-1, MW-2, and MW-3 on October 25, 2016. A blind duplicate sample was collected from monitoring well MW-3 for quality assurance/quality control purposes.

Analytical Results

A slight petroleum odor and chemical sheen was observed from the purge water at monitoring well MW-3. The purge water from MW-3 was cloudy in appearance. Purge water from MW-2 was clear in appearance, had no fuel odor, or sheen; but it did have a musty odor. There was no petroleum odor or sheen detected from the monitoring well or the purge water during sampling activities from monitoring well MW-1. Purge water was clear in appearance. No other odors were detected. Groundwater measurements taken during the October 2016 sampling event indicated that the water table was approximately 13.0' below ground surface at the time of sampling.

All three monitoring wells were sampled and analyzed for GRO by method AK101 and DRO by method AK102. MW-1 was sampled for BTEX by method EPA 8021B. MW-2 and MW-3 were sampled for VOC's by method EPA 8260B and PAH by method EPA 8270DSIM. A summary of current and historical sample results for GRO, DRO, benzene, toluene, ethylbenzene, and total xylenes (BTEX) is listed in Table 1. An analytical summary table of all 2016 sample results including VOC's results is included in Appendix C. The complete SGS Laboratory Report and ADEC laboratory checklist is included in Appendix C.

Table 1 - Historical Summary of Groundwater Results

Sample Location	Sample ID	Date Sampled	EPA Method 8021B or 8260B				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-K-1008	10/22/2008	ND	ND	ND	ND	ND	ND
	MW1-K-0809	08/20/2009	ND	ND	ND	ND	N/A	480
	MW1-911	09/14/2011	1.24	ND	ND	ND	ND	ND
	MW1-1012	10/17/2012	1.77	ND	ND	ND	ND	ND
	MW1-K-0713	07/22/2013	0.772	ND	ND	ND	ND	ND
	MW1-K-0814	08/13/2014	ND	ND	ND	ND	68 B	38 B
	MW1-K-0915	09/22/2015	3.92	ND	5.20 J	2.23 J	40.0 J	439 J
	MW1-1016	10/25/2016	1.69	ND	ND	ND	ND	283
MW-2	MW2-K-1008	10/22/2008	**96.4**	19.4	**262**	**268**	**5410**	1310
	DUP-K-1008 Blind field duplicate sample to MW2-K-1008	10/22/2008	**93.2**	18.2	**250**	**254**	**5020**	**1670**
	MW2-K-0809	08/20/2009	**98.6**	ND	**32.6**	55.8	N/A	460
	MW2-911	09/14/2011	**32.2**	31.0	**36.0**	51.3	1930	444
	DUP1-911 Blind field duplicate sample to MW2-911	09/14/2011	**34.1**	34.0	**41.8**	65.4	2160	549
	MW2-1012	10/17/2012	**31.4**	20.8	**44.3**	53	**2830**	631
	MW2-K-0713	07/22/2013	**51.2**	47.0	**33.5**	131	1500	859
	MW2-K-0814	08/13/2014	**21**	4.9	7.5	22	**2200 B**	1200 B
	MW2-K-0915	09/22/2015	**21.1**	5.47	**22.8**	60.6	808	785
	MW2-1016	10/25/2016	**24.7**	4.51	**30.0**	59.6	656	**2750**
ADEC Cleanup Level [1]			4.6	1100	15	190	2200	1500

[1] Title 18 of the Alaska Administrative Code, Chapter 75. Section 345.

* Historical units were changed from mg/L to µg/L to match current DEC groundwater cleanup level units.

ND = Not detected at or above the method reporting limit.

B=Analyte was detected in the associated blank and sample

J=estimated concentration

N/A = Not Analyzed.

Results above ADEC Regulatory Limit in **Bold**.

NOTE: 2016 VOC Results Summary Table is included in Appendix C

(Table 1 is continued on the next page)

Table 1 (Continued) - Historical Summary of Groundwater Results

Sample Location	Sample ID	Date Sampled	EPA Method 8021B or 8260B				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-3	MW3-K-1008	10/22/2008	**37.9**	9.00	**605**	**1530**	**7910**	**11600**
	MW3-K-0809	08/20/2009	**59.4**	ND	**471**	**1060**	N/A	**3040**
	DUP-K-0809 Blind field duplicate sample to MW3-K-0809	08/20/2009	**59.4**	ND	**515**	**1170**	N/A	**3260**
	MW3-911	09/14/2011	**11.4**	9.72	**266**	**1350**	**5760**	**3910**
	MW3-1012	10/17/2012	**7.27**	4.97	**364**	**1430**	**13400**	**28500**
	DUP1-1012 Blind field duplicate sample to MW3-1012	10/17/2012	**6.53**	4.65	**245**	**1190**	**11000**	**24400**
	MW3-K-0713	07/22/2013	4.27	13.0	**192**	**668**	**2640**	**7340**
	DUP-K-0713 Blind field duplicate sample to MW3-K-0814	07/22/2013	4.13	10.7	**179**	**756**	**2540**	**5840**
	MW3-K-0814	08/13/2014	0.83	1.5	**86**	**320**	**2800**	**6100 B**
	DUP-K-0814 Blind field duplicate sample to MW3-K-0814	08/13/2014	0.84	1.3	**79**	**300**	**4000**	**6100 B**
	MW3-K-0915	09/22/2015	1.76	1.18	**57.5**	**344**	1470	**3440**
	DUP-K-0915 Blind field duplicate sample to MW3-K-0915	09/22/2015	2.15	1.20	**57.8**	**343**	1650	**3890**
	MW3-1016	10/25/2016	0.500	0.600 J	**33.9**	246	1230	**5020**
	DUP-1016	10/25/2016	0.470	0.580 J	**34.2**	**242**	1250	**5990**
ADEC Cleanup Level [1]			4.6	1100	15	190	2200	1500

[1] Title 18 of the Alaska Administrative Code, Chapter 75. Section 345.
* Historical units were changed from mg/L to µg/L to match current DEC groundwater cleanup level units.
ND = Not detected at or above the method reporting limit.
B=Analyte was detected in the associated blank and sample
J=estimated concentration
N/A = Not Analyzed.
Results above ADEC Regulatory Limit in **Bold**.

NOTE: 2016 VOC Results Summary Table is included in Appendix C

Blind Duplicate Samples

Field quality control (QC) procedures for this project included the collection and analysis of a field duplicate sample. One field duplicate (DUP-1016) was collected for quality control purposes. Sample DUP-1016 was a blind field duplicate to MW3-1016. 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.

Relative percent difference (RPD) calculations provide a comparison of two theoretically identical samples that are submitted blind to the laboratory to provide an un-biased measure of precision. Due to the nature of the RPD calculation, sample data for both samples must be reported for the RPD calculation to provide meaningful data. RPD calculations are computed for all compounds that had laboratory reported detections above the LOQ for both samples. RPD calculations for are shown in Table 2 below.

Table 2: Relative Percent Difference Calculations

Sample ID / Duplicate ID	Compound	Sample Concentration (µg/L water)	Duplicate Concentration (µg/L water)	RPD (%)
MW3-K-0915 and DUP-K-0915	GRO	1230	1250	1.6
	DRO	5020	5990	17.6
	Benzene	0.500	0.470	6.2
	Toluene	0.600	0.580	3.4
	Ethylbenzene	33.9	34.2	0.9
	Total Xylenes	246	242	1.6
	1-Methylnaphthalene	39.0	39.8	2.0
	2-Methylnaphthalene	42.3	42.7	0.9
	Acenaphthene	0.748	0.767	2.5
	Fluorene	1.62	1.54	5.1
	Naphthalene (by 8270DSIM)	48.4	50.0	3.3
	Phenanthrene	0.631	0.635	0.6
	1,2,4-Trimethylbenzene	163	161	1.2
	1,3,5-Trimethylbenzene	64.0	62.2	2.9
	2-Butanone	16.4	15.9	3.1
	4-Isopropyltoluene	6.38	6.23	2.4
	Isopropylbenzene	25.9	24.8	4.3
	Naphthalene (by 8260C)	74.3	74.4	0.1
	N-Propylbenzene	39.3	37.7	4.2
	sec-Butylbenzene	6.69	6.59	1.5

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 limit for field duplicate RPD is 30% in water. All calculated field duplicate RPDs fell below the ADEC limit of 30% in water. Data quality and usability is not affected.

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.

Under 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 limit of quantitation (LOQ). A result above the LOQ can indicate that cross-contamination occurred between samples during sample transport or analysis, or indicate laboratory contamination.

Trip blank samples were analyzed for all volatile analysis including GRO by AK 101 and VOCs by EPA 8260B.

No analytes were detected above the LOQ in the analyzed trip blank samples. No impact on data quality or usability is expected due to trip blank analyses.

Quality Assurance / Quality Control

The ADEC Environmental Laboratory Data Quality Assurance Requirements (ADEC 2009) and United States Environmental Protection Agency (EPA) National Functional Guidelines for Organic Review (EPA 2017) were followed in this site investigation. The data were 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 SGS laboratory of Anchorage, AK. The analytical laboratory report and chain-of-custody record is included in Appendix C.

A complete set of quality control parameters were reviewed as listed below.

- 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 limits of quantitation (LOQ)

<u>Work order # 1168788</u>

All reviewed quality control parameters were met for this analytical sampling event with the following exceptions:

- MW3-1016 (1168788003) PS- AK101 - Surrogate recovery for 4-bromofluorobenzene (202%) does not meet QC criteria due to matrix interference;
- DUP-1016 (1168788004) PS- AK101 - Surrogate recovery for 4-bromofluorobenzene (201%) does not meet QC criteria due to matrix interference.

Data quality and usability is not affected by the above QC errors. Laboratory quality assurance included the procedures outlined in the laboratory's ADEC-approved standard operating procedures documentation. As presented in the laboratory report's QC summary sheet, all other laboratory QC parameters fell within the acceptable limits.

Conclusions and Recommendations

Analytical results indicate that groundwater collected from MW-1 remains below ADEC groundwater cleanup levels for all tested analytes. Note: The GRO results for MW-1 from the 08-13-2014 sampling event for MW-1 were likely biased high due to method blank contamination.

Analytical results from MW-2 were below ADEC groundwater cleanup levels for all tested analytes with the following exceptions:

- Benzene (24.7µg/L);
- Ethylbenzene (30.0/L µg);
- DRO (2750 µg/L); and
- Naphthalene (11.3 µg/L)

The concentrations of benzene, ethylbenzene, and DRO appear to have increased since the previous sampling event (09/22/2015). The concentrations of toluene, total xylenes, and GRO have all decreased since the previous sampling event. Note: The DRO and GRO results for MW-2 from the 08-13-2014 sampling event for MW-1 were likely biased high due to method blank contamination.

Analytical results from MW-3 were below ADEC groundwater cleanup levels for all tested analytes with the following exceptions:

- DRO (5990 µg/L);
- 1-methylnaphthalene (39.8 µg/L);
- 2-methylnaphthalene (42.7 µg/L);
- Naphthalene (74.4 µg/L);
- 1,2,4-trimethylbenzene (163 µg/L);
- Ethylbenzene (34.2 µg/L); and
- Total xylenes (246 µg/L)

The concentration of DRO appears to have increased significantly since the previous sampling event. Concentrations of benzene, toluene, ethylbenzene, total xylenes, and GRO continue to decrease steadily and are below ADEC groundwater cleanup levels. Analytical results for all other analytes are below ADEC ground water cleanup levels.

MW2 is located adjacent to the former site of two (2) 10,000-gallon gasoline UST's. MW3 is located adjacent to the former site of one (1) 10,000-gallon gasoline UST and one (1) 5,000-gallon diesel UST.

A closed loop groundwater elevation survey has not been performed at this site and an actual groundwater gradient has not been calculated. The presumed groundwater flow in the area is to the west northwest. If this assumption is correct MW-1 is an up gradient well. Both MW-2 and MW-3 are only slightly down gradient from the source area, but could not be placed any further away without crossing the property boundary.

Increases in the concentration of DRO were documented in both MW-2 and MW-3 in the 2016 sampling event, however, a consistent trend has not been established over a 3-year period. A review of historical analytical results from the previous eight years of data

indicates a general decreasing trend for all analytes in MW-3. Historical MW-2 results indicate a general decreasing trend for all analytes except DRO, although concentrations of all analytes have demonstrated increasing and decreasing fluctuations over shorter intervals of time. If MW-2 is down gradient of MW-3, plume migration could be contributing to these fluctuations. Without additional down gradient groundwater data it is not possible to determine if natural attenuation is occurring or if contaminants are migrating down gradient.

ARES recommends the following:

- Schedule an annual sampling event of wells MW-1, MW-2, MW-3 during period of high seasonal groundwater conditions in August 2017. Groundwater samples should be analyzed for GRO, DRO, PAH, and VOC analysis (BTEX only for MW-1);
- Conduct a closed loop groundwater elevation survey, calculate the groundwater gradient and groundwater flow direction at the site.
- Contaminants are likely migrating off-site. Additional down-gradient samples (soil/water) would need to be collected to determine the extent of the contaminant plume. ARES recommends soil borings and well points/groundwater monitoring wells be placed down-gradient to assess potential impacts. Permission would need to be obtained from adjacent property owners prior; and
- Following groundwater gradient calculations, a well receptor survey should be conducted to identify potential receptors within a 1/2 mile of the Subject Property.

Limitations

This report presents the analytical results from a limited number of 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 analyses were performed. No conclusions can be drawn about the presence or absence of other contaminants. This is not a geotechnical study.

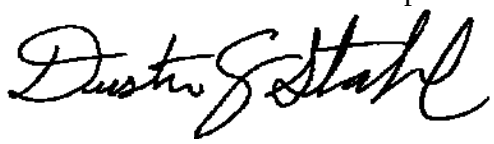
The data presented in this report should be considered representative of the time of our site observations and sample collection. Changes in site conditions can occur with time because of natural forces or human activity. ARES reserves the right to modify or alter conclusions and recommendations should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

This report was prepared for the exclusive use of Gary Lundgren, and his 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, release investigations, and clean-up efforts.

Dustin Stahl / Environmental Specialist



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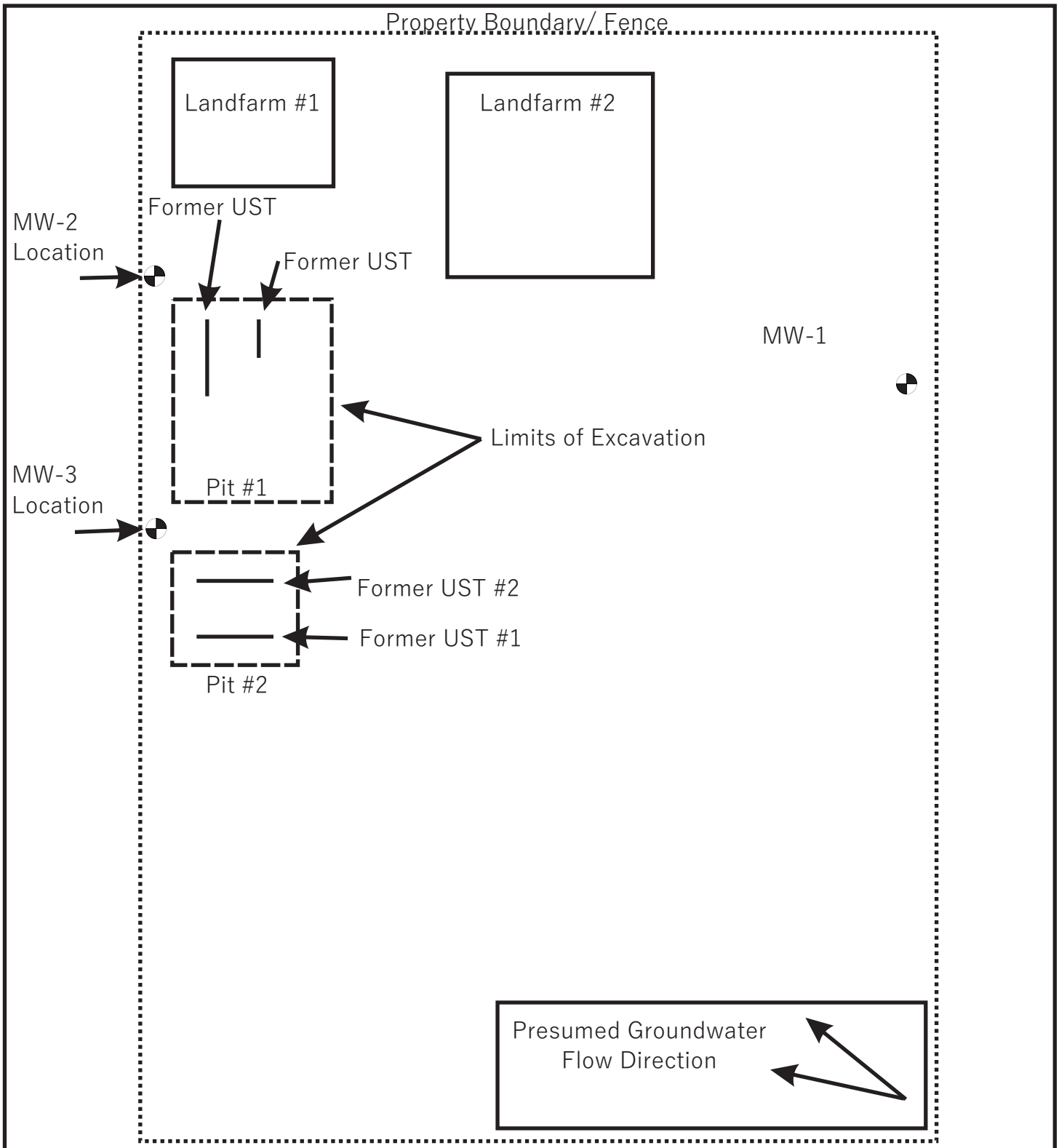
Enclosure: Appendix A – Figures
Appendix B – Graphical Summary of GRO and DRO results over time
Appendix C – Analytical Results Summary Table, SGS Laboratory Report and ADEC Laboratory Checklist
Appendix D – Groundwater Sampling Field Data Sheets

Appendix A:
Figures



N
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Site Map

Scale in Feet:

0 25 50 100

2016 Groundwater Monitoring Well Report 2751 Picket Place

January 2016

FIGURE 1

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

Appendix B:

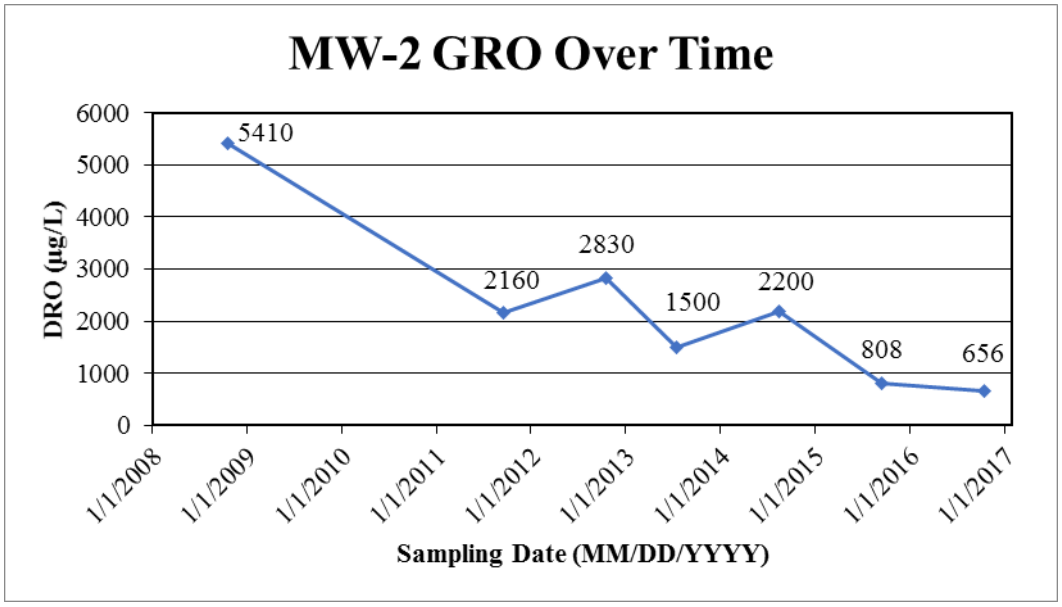
Graphical Summary of GRO and DRO results over time

MW-1

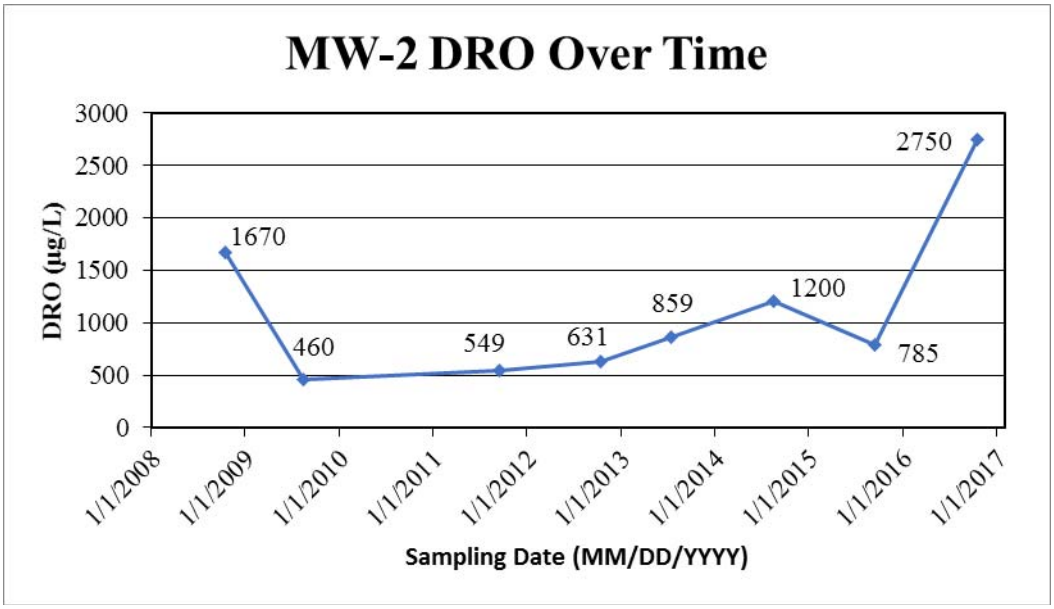
Not enough detected results to establish meaningful graphical representation of results for GRO or DRO.

MW-2

Date	GRO (µg/L)
10/22/2008	5410
9/14/2011	2160
10/17/2012	2830
7/22/2013	1500
8/13/2014	2200
9/22/2015	808
10/25/2016	656

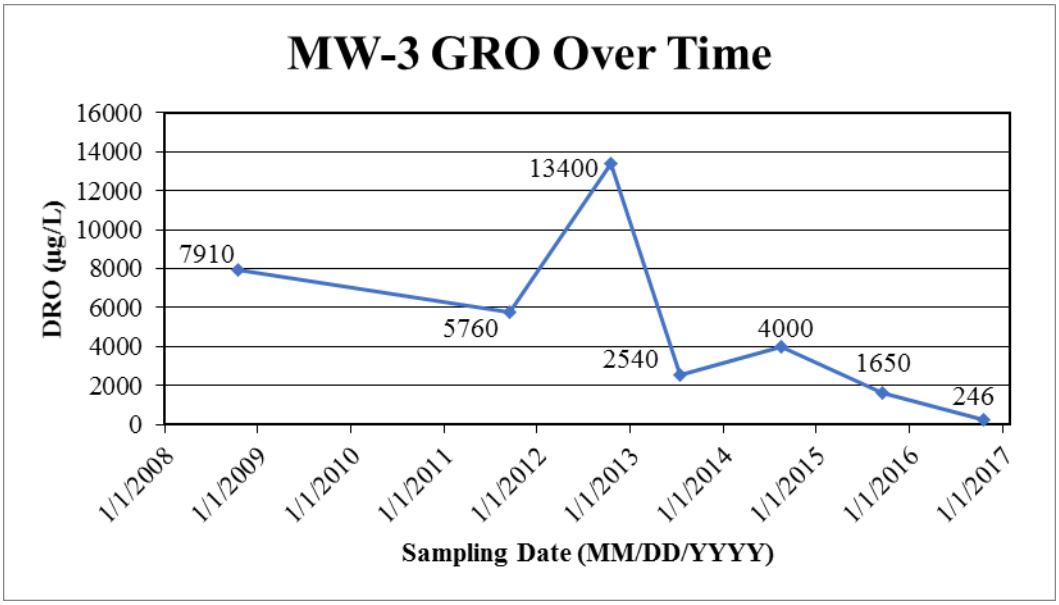


Date	DRO (µg/L)
10/22/2008	1670
8/20/2009	460
9/14/2011	549
10/17/2012	631
7/22/2013	859
8/13/2014	1200
9/22/2015	785
10/25/2016	2750

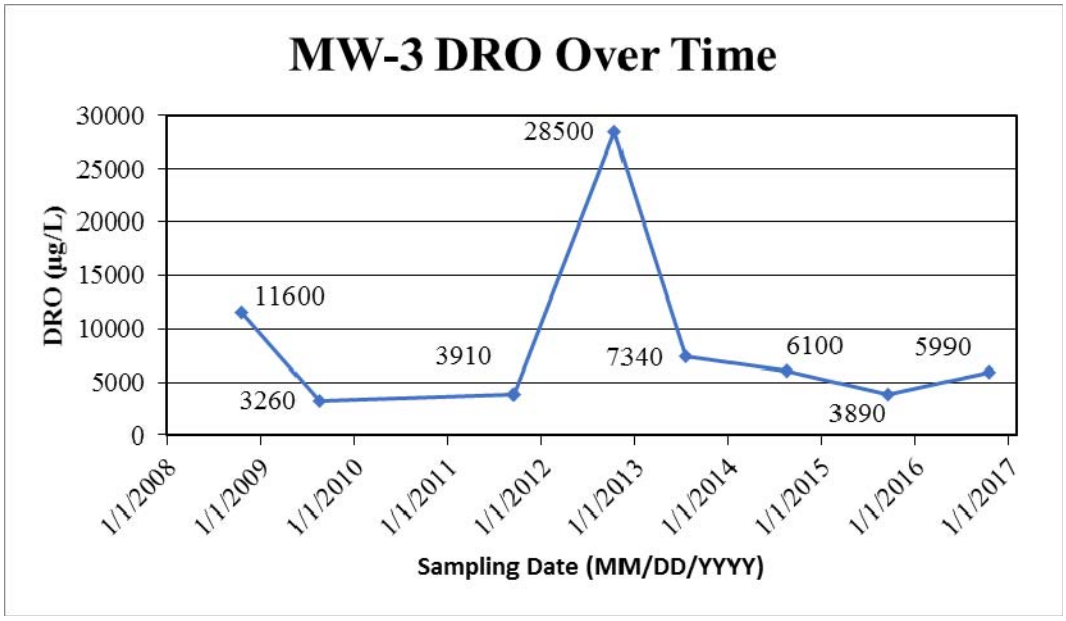


MW-3

Date	GRO (µg/L)
10/22/2008	7910
9/14/2011	5760
10/17/2012	13400
7/22/2013	2540
8/13/2014	4000
9/22/2015	1650
10/25/2016	246



Date	DRO (µg/L)
10/22/2008	11600
8/20/2009	3260
9/14/2011	3910
10/17/2012	28500
7/22/2013	7340
8/13/2014	6100
9/22/2015	3890
10/25/2016	5990



Appendix C:

2016 Analytical Summary Table,
SGS Laboratory Report
&
ADEC Lab Quality Checklist

Former Kobuk Feed and Fuel, Analytical Groundwater Results Summary Table, Sampling Series 1016

			Sample ID	MW1-1016		MW2-1016		MW3-1016		DUP-1016	
			Collection Date	10/25/2016		10/25/2016		10/25/2016		10/25/2016	
			Sample Location Area	Kobuk Feed and Fuel		Kobuk Feed and Fuel		Kobuk Feed and Fuel		Kobuk Feed and Fuel	
			Description								
			Depth (feet below ground surface)	12.11-16.95		14.41-18.18		13.00-18.06		13.00-18.06	
			Matrix	Water		Water		Water		Water	
Method	**Analyte**	**Units**	**ADEC cleanup level (July 1, 2017)**	**Analytical Results [DL]**	**Qualifiers**	**Analytical Results [DL]**	**Qualifiers**	**Analytical Results [DL]**	**Qualifiers**	**Analytical Results [DL]**	**Qualifiers**
AK 101	GRO	µg/L	2200	50.0 [31.0]	U	**656 [31.0]**		**1230 [31.0]**		1250 [31.0]	
AK 102	DRO	µg/L	1500	283 [170]		**2750 [176]**		**5020 [173]**		**5990 [170]**	
EPA 8021B	Benzene	µg/L	4.6	**1.69 [0.150]**		NA		NA		NA	
EPA 8021B	Ethylbenzene	µg/L	15	0.500 [0.310]	U	NA		NA		NA	
EPA 8021B	o-Xylene	µg/L	NS	0.500 [0.310]	U	NA		NA		NA	
EPA 8021B	m-Xylene & p-Xylene	µg/L	NS	1.00 [0.620]	U	NA		NA		NA	
EPA 8021B	Toluene	µg/L	1100	0.500 [0.310]	U	NA		NA		NA	
EPA 8270D SIM	1-Methylnaphthalene	µg/L	11	NA		**1.19 [0.0142]**		**39.0 [0.144]**		**39.8 [0.142]**	
EPA 8270D SIM	2-Methylnaphthalene	µg/L	36	NA		**0.310 [0.0142]**		**42.3 [0.144]**		**42.7 [0.142]**	
EPA 8270D SIM	Acenaphthene	µg/L	530	NA		**0.189 [0.0142]**		**0.748 [0.0144]**		**0.767 [0.0142]**	
EPA 8270D SIM	Acenaphthylene	µg/L	260	NA		0.0236 [0.0142]	U	0.0240 [0.0144]	U	0.0236 [0.0142]	U
EPA 8270D SIM	Anthracene	µg/L	43	NA		0.0236 [0.0142]	U	0.0514 [0.0144]		**0.0573 [0.0142]**	
EPA 8270D SIM	Benzo[a]anthracene	µg/L	0.12	NA		0.0236 [0.0142]	U	0.0240 [0.0144]	U	0.0236 [0.0142]	U
EPA 8270D SIM	Benzo[a]pyrene	µg/L	0.034	NA		0.00945 [0.00585]	U	0.00960 [0.00596]	U	0.00945 [0.00585]	U
EPA 8270D SIM	Benzo[b]fluoranthene	µg/L	0.34	NA		0.0236 [0.0142]	U	0.0240 [0.0144]	U	0.0236 [0.0142]	U
EPA 8270D SIM	Benzo[g,h,i]perylene	µg/L	0.26	NA		0.0236 [0.0142]	U	0.0240 [0.0144]	U	0.0236 [0.0142]	U
EPA 8270D SIM	Benzo[k]fluoranthene	µg/L	0.80	NA		0.0236 [0.0142]	U	0.0240 [0.0144]	U	0.0236 [0.0142]	U
EPA 8270D SIM	Chrysene	µg/L	2.0	NA		0.0236 [0.0142]	U	0.0240 [0.0144]	U	0.0236 [0.0142]	U
EPA 8270D SIM	Dibenz(a,h)anthracene	µg/L	0.034	NA		0.00945 [0.00585]	U	0.00960 [0.00596]	U	0.00945 [0.00585]	U
EPA 8270D SIM	Fluoranthene	µg/L	260	NA		0.0236 [0.0142]	U	0.0240 [0.0144]	U	0.0236 [0.0142]	U
EPA 8270D SIM	Fluorene	µg/L	290	NA		**0.0817 [0.0142]**		**1.62 [0.0144]**		**1.54 [0.0142]**	
EPA 8270D SIM	Indeno[1,2,3-cd]pyrene	µg/L	0.19	NA		0.0236 [0.0142]	U	0.0240 [0.0144]	U	0.0236 [0.0142]	U
EPA 8270D SIM	Naphthalene	µg/L	1.7	NA		**7.32 [0.0292]**		**48.4 [0.298]**		**50.0 [0.292]**	
EPA 8270D SIM	Phenanthrene	µg/L	170	NA		0.0236 [0.0142]	U	**0.631 [0.0144]**		**0.635 [0.0142]**	
EPA 8270D SIM	Pyrene	µg/L	120	NA		0.0236 [0.0142]	U	0.0240 [0.0144]	U	0.0236 [0.0142]	U
EPA 8260C	1,1,1,2-Tetrachloroethane	µg/L	5.7	NA		0.250 [0.150]	U	0.250 [0.150]	U	0.250 [0.150]	U
EPA 8260C	1,1,1-Trichloroethane	µg/L	8000	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	1,1,2,2-Tetrachloroethane	µg/L	0.76	NA		0.250 [0.150]	U	0.250 [0.150]	U	0.250 [0.150]	U
EPA 8260C	1,1,2-Trichloroethane	µg/L	0.41	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	1,1-Dichloroethane	µg/L	28	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	1,1-Dichloroethene	µg/L	280	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	1,1-Dichloropropene	µg/L	NS	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	1,2,3-Trichlorobenzene	µg/L	7.0	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	1,2,3-Trichloropropane	µg/L	0.0075	NA		0.500 [0.310]	U DL	0.500 [0.310]	U DL	0.500 [0.310]	U DL
EPA 8260C	1,2,4-Trichlorobenzene	µg/L	4.0	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	1,2,4-Trimethylbenzene	µg/L	15	NA		**8.70 [0.310]**		**163 [3.10]**		**161 [3.10]**	
EPA 8260C	1,2-Dibromo-3-Chloropropane	µg/L	NS	NA		5.00 [3.10]	U	5.00 [3.10]	U	5.00 [3.10]	U
EPA 8260C	1,2-Dibromoethane	µg/L	0.075	NA		0.500 [0.310]	U DL	0.500 [0.310]	U DL	0.500 [0.310]	U DL
EPA 8260C	1,2-Dichlorobenzene	µg/L	300	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	1,2-Dichloroethane	µg/L	1.7	NA		**0.390 [0.150]**	J	0.250 [0.150]	U	0.250 [0.150]	U
EPA 8260C	1,2-Dichloropropane	µg/L	4.4	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	1,3,5-Trimethylbenzene	µg/L	120	NA		**5.35 [0.310]**		**64.0 [0.310]**		**62.2 [0.310]**	
EPA 8260C	1,3-Dichlorobenzene	µg/L	300	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	1,3-Dichloropropane	µg/L	NS	NA		0.250 [0.310]	U	0.250 [0.310]	U	0.250 [0.310]	U
EPA 8260C	1,4-Dichlorobenzene	µg/L	4.8	NA		0.250 [0.310]	U	0.250 [0.310]	U	0.250 [0.310]	U
EPA 8260C	2,2-Dichloropropane	µg/L	NS	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	2-Butanone	µg/L	5600	NA		5.00 [3.10]	U	**16.4 [3.10]**		**15.9 [3.10]**	
EPA 8260C	2-Chlorotoluene	µg/L	NS	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	2-Hexanone	µg/L	38	NA		5.00 [3.10]	U	5.00 [3.10]	U	5.00 [3.10]	U
EPA 8260C	4-Chlorotoluene	µg/L	NS	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	4-Isopropyltoluene	µg/L	NS	NA		**0.990 [0.310]**	J	**6.38 [0.310]**		**6.23 [0.310]**	
EPA 8260C	4-Methyl-2-pentanone	µg/L	6300	NA		5.00 [3.10]	U	5.00 [3.10]	U	5.00 [3.10]	U

Table Notes and Data Flags are defined at the end of the table. Result value for non-detect sample results is equivelent to laboratory LOD. DL listed in brackets. Solid shade indicates ADEC cleanup level exceedance

Former Kobuk Feed and Fuel, Analytical Groundwater Results Summary Table, Sampling Series 1016 Continued

			Sample ID	MW1-1016		MW2-1016		MW3-1016		DUP-1016	
			Collection Date	10/25/2016		10/25/2016		10/25/2016		10/25/2016	
			Sample Location Area	Kobuk Feed and Fuel		Kobuk Feed and Fuel		Kobuk Feed and Fuel		Kobuk Feed and Fuel	
			Description								
			Depth (feet below ground surface)	12.11-16.95		14.41-18.18		13.00-18.06		13.00-18.06	
			Matrix	Water		Water		Water		Water	
Method	**Analyte**	**Units**	**ADEC cleanup level**	**Analytical Results [DL]**	**Qualifiers**	**Analytical Results [DL]**	**Qualifiers**	**Analytical Results [DL]**	**Qualifiers**	**Analytical Results [DL]**	**Qualifiers**
EPA 8260C	Benzene	µg/L	4.6	NA		**24.7 [0.120]**		**0.500 [0.120]**		**0.470 [0.120]**	
EPA 8260C	Bromobenzene	µg/L	62	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Bromochloromethane	µg/L	NS	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Bromodichloromethane	µg/L	1.3	NA		0.250 [0.150]	U	0.250 [0.150]	U	0.250 [0.150]	U
EPA 8260C	Bromoform	µg/L	33	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Bromomethane	µg/L	7.5	NA		5.00 [3.10]	U	5.00 [3.10]	U	5.00 [3.10]	U
EPA 8260C	Carbon disulfide	µg/L	810	NA		5.00 [3.10]	U	5.00 [3.10]	U	5.00 [3.10]	U
EPA 8260C	Carbon tetrachloride	µg/L	4.6	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Chlorobenzene	µg/L	78	NA		0.250 [0.150]	U	0.250 [0.150]	U	0.250 [0.150]	U
EPA 8260C	Chloroethane	µg/L	21000	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Chloroform	µg/L	2.2	NA		0.500 [0.300]	U	0.500 [0.300]	U	0.500 [0.300]	U
EPA 8260C	Chloromethane	µg/L	190	NA		**2.37 [0.310]**		0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	cis-1,2-Dichloroethene	µg/L	36	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	cis-1,3-Dichloropropene	µg/L	NS	NA		0.250 [0.150]	U	0.250 [0.150]	U	0.250 [0.150]	U
EPA 8260C	Dibromochloromethane	µg/L	8.7	NA		0.250 [0.150]	U	0.250 [0.150]	U	0.250 [0.150]	U
EPA 8260C	Dibromomethane	µg/L	8.3	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Dichlorodifluoromethane	µg/L	200	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Ethylbenzene	µg/L	15	NA		**30.0 [0.310]**		**33.9 [0.310]**		**34.2 [0.310]**	
EPA 8260C	Freon-113	µg/L	55000	NA		5.00 [3.10]	U	5.00 [3.10]	U	5.00 [3.10]	U
EPA 8260C	Hexachlorobutadiene	µg/L	1.4	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Isopropylbenzene	µg/L	450	NA		**2.62 [0.310]**		**25.9 [0.310]**		**24.8 [0.310]**	
EPA 8260C	Methylene Chloride	µg/L	110	NA		2.50 [1.00]	U	2.50 [1.00]	U	2.50 [1.00]	U
EPA 8260C	Methyl tert-butyl ether	µg/L	140	NA		5.00 [3.10]	U	5.00 [3.10]	U	5.00 [3.10]	U
EPA 8260C	m-Xylene & p-Xylene	µg/L	NS	NA		**53.7 [0.620]**		**178 [6.20]**		**174 [6.20]**	
EPA 8260C	Naphthalene	µg/L	1.7	NA		**11.3 [3.10]**		**74.3 [31.0]**	J	**74.4 [31.0]**	J
EPA 8260C	n-Butylbenzene	µg/L	1000	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	N-Propylbenzene	µg/L	660	NA		**3.75 [0.310]**		**39.3 [0.310]**		**37.7 [0.310]**	
EPA 8260C	o-Xylene	µg/L	NS	NA		**5.93 [0.310]**		**68.6 [3.10]**		**68.2 [3.10]**	
EPA 8260C	sec-Butylbenzene	µg/L	2000	NA		**0.520 [0.310]**	J	**6.69 [0.310]**		**6.59 [0.310]**	
EPA 8260C	Styrene	µg/L	1200	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	t-Butylbenzene	µg/L	690	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Tetrachloroethene	µg/L	41	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Toluene	µg/L	1100	NA		**4.51 [0.310]**		**0.600 [0.310]**	J	**0.580 [0.310]**	J
EPA 8260C	trans-1,2-Dichloroethene	µg/L	360	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	trans-1,3-Dichloropropene	µg/L	NS	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Trichloroethene	µg/L	2.8	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Trichlorofluoromethane	µg/L	5200	NA		0.500 [0.310]	U	0.500 [0.310]	U	0.500 [0.310]	U
EPA 8260C	Vinyl acetate	µg/L	410	NA		5.00 [3.10]	U	5.00 [3.10]	U	5.00 [3.10]	U
EPA 8260C	Vinyl chloride	µg/L	0.19	NA		0.500 [0.310]	U DL	0.500 [0.310]	U DL	0.500 [0.310]	U DL
EPA 8260C	Xylenes (total)	µg/L	190	NA		**59.6 [1.00]**		**246 [10.0]**		**242 [10.0]**	

Table Notes and Data Flags are defined at the end of the table. Result value for non-detect sample results is equivelent to laboratory LOD. DL listed in brackets. Solid shade indicates ADEC cleanup level exceedance

Former Kobuck Feed and Fuel, Analytical Groundwater Results Summary Table, Sampling Series 1016
Table Definitions and Notes

Data Flag / Abbreviation	Definition
DL	Detection Limit
J	The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
LL	(Low Level) Analysis with lower reporting limits than standard methanol preservative analysis.
LOD	Limit of Detection
LOQ	Limit of Quantitation (equivelent to Method Reporting Limit)
M	Manual integrated compound.
ND	(Not Detected) Analyte not detected above the Method Detection Limit.
NS	(Not Stipulated) Cleanup level not stipulated by ADEC.
NA	Not Applicable
Q	One or more quality control criteria failed.
RL	(Reporting Limit) The analyte was undetected, however due to a LOQ above the ADEC regulatory limit, it is possible that the concentration is present below the LOQ, but above ADEC regulatory limits.
U	Undetected at the Limit of Detection

Notes
ADEC regulatory limits / cleanup levels for soil samples are the most stringent of 18 AAC 75.341 Method 2 Table B1 and B2 Cleanup Level for under 40 Inches. 18 AAC 75.341 Revison Dated March 2017)
Results column consists of the results if the compound is detected above the method detection limit. Otherwise it gives the LOD or the ND symbol. The number in brackets is the DL.
[1] Cleanup levels for samples analyzed by TCLP analysis are based upon EPA regulation 40 CFR 261.24 Table 1 - Maximum Concentration of Contaminats for the Toxicity Characteris

Laboratory Report of Analysis

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

Report Number: **1168788**

Client Project: **1016 Kobuk Feed & Fuel**

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

Customer: AKRESRS Alaska Resources and Env. Svcs

Project: 1168788 1016 Kobuk Feed & Fuel

Refer to the sample receipt form for information on sample condition.

1168788003 PS MW3-1016

AK101 - Surrogate recovery for 4-bromofluorobenzene (202%) does not meet QC criteria due to matrix interference.

1168788004 PS DUP-1016

AK101 - Surrogate recovery for 4-bromofluorobenzene (201%) does not meet QC criteria due to matrix interference.

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

Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
SW8260B				
1168788002	MW2-1016	VMS16367	4-Isopropyltoluene	SP
1168788003	MW3-1016	VMS16367	4-Isopropyltoluene	SP
1168788004	DUP-1016	VMS16367	4-Isopropyltoluene	SP

Manual Integration Reason Code Descriptions

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

All DRO/RRO analysis are integrated per SOP.

Print Date: 11/14/2016 2:14:34PM

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

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW1-1016	1168788001	10/26/2016	10/27/2016	Water (Surface, Eff., Ground)
MW2-1016	1168788002	10/26/2016	10/27/2016	Water (Surface, Eff., Ground)
MW3-1016	1168788003	10/26/2016	10/27/2016	Water (Surface, Eff., Ground)
DUP-1016	1168788004	10/26/2016	10/27/2016	Water (Surface, Eff., Ground)
Trip Blank	1168788005	10/26/2016	10/27/2016	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO Low Volume (W)
AK101	Gasoline Range Organics (W)
SW8260B	Volatile Organic Compounds (W) FULL

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Detectable Results Summary

Client Sample ID: **MW1-1016**
Lab Sample ID: 1168788001

	Parameter	Result	Units
Volatile Fuels	Benzene	1.69	ug/L

Client Sample ID: **MW2-1016**
Lab Sample ID: 1168788002

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	1.19	ug/L
	2-Methylnaphthalene	0.310	ug/L
	Acenaphthene	0.189	ug/L
	Fluorene	0.0817	ug/L
	Naphthalene	7.32	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	2.75	mg/L
Volatile Fuels	Gasoline Range Organics	0.656	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	8.70	ug/L
	1,2-Dichloroethane	0.390J	ug/L
	1,3,5-Trimethylbenzene	5.35	ug/L
	4-Isopropyltoluene	0.990J	ug/L
	Benzene	24.7	ug/L
	Chloromethane	2.37	ug/L
	Ethylbenzene	30.0	ug/L
	Isopropylbenzene (Cumene)	2.62	ug/L
	Naphthalene	11.3	ug/L
	n-Propylbenzene	3.75	ug/L
	o-Xylene	5.93	ug/L
	P & M -Xylene	53.7	ug/L
	sec-Butylbenzene	0.520J	ug/L
	Toluene	4.51	ug/L
	Xylenes (total)	59.6	ug/L

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Detectable Results Summary

Client Sample ID: **MW3-1016**
Lab Sample ID: 1168788003

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	39.0	ug/L
	2-Methylnaphthalene	42.3	ug/L
	Acenaphthene	0.748	ug/L
	Anthracene	0.0514	ug/L
	Fluorene	1.62	ug/L
	Naphthalene	48.4	ug/L
	Phenanthrene	0.631	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	5.02	mg/L
Volatile Fuels	Gasoline Range Organics	1.23	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	163	ug/L
	1,3,5-Trimethylbenzene	64.0	ug/L
	2-Butanone (MEK)	16.4	ug/L
	4-Isopropyltoluene	6.38	ug/L
	Benzene	0.500	ug/L
	Ethylbenzene	33.9	ug/L
	Isopropylbenzene (Cumene)	25.9	ug/L
	Naphthalene	74.3J	ug/L
	n-Propylbenzene	39.3	ug/L
	o-Xylene	68.6	ug/L
	P & M -Xylene	178	ug/L
	sec-Butylbenzene	6.69	ug/L
	Toluene	0.600J	ug/L
	Xylenes (total)	246	ug/L

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Detectable Results Summary

Client Sample ID: **DUP-1016**
Lab Sample ID: 1168788004

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	39.8	ug/L
	2-Methylnaphthalene	42.7	ug/L
	Acenaphthene	0.767	ug/L
	Anthracene	0.0573	ug/L
	Fluorene	1.54	ug/L
	Naphthalene	50.0	ug/L
	Phenanthrene	0.635	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	5.99	mg/L
Volatile Fuels	Gasoline Range Organics	1.25	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	161	ug/L
	1,3,5-Trimethylbenzene	62.2	ug/L
	2-Butanone (MEK)	15.9	ug/L
	4-Isopropyltoluene	6.23	ug/L
	Benzene	0.470	ug/L
	Ethylbenzene	34.2	ug/L
	Isopropylbenzene (Cumene)	24.8	ug/L
	Naphthalene	74.4J	ug/L
	n-Propylbenzene	37.7	ug/L
	o-Xylene	68.2	ug/L
	P & M -Xylene	174	ug/L
	sec-Butylbenzene	6.59	ug/L
	Toluene	0.580J	ug/L
	Xylenes (total)	242	ug/L

Client Sample ID: **Trip Blank**
Lab Sample ID: 1168788005

	Parameter	Result	Units
Volatile Fuels	Gasoline Range Organics	0.0362J	mg/L

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Results of **MW1-1016**

Client Sample ID: **MW1-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788001
Lab Project ID: 1168788

Collection Date: 10/26/16 16:40
Received Date: 10/27/16 09:38
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	0.283	U	0.566	0.170	mg/L	1		11/07/16 19:43
Surrogates								
5a Androstane (surr)	87.1		50-150		%	1		11/07/16 19:43

Batch Information

Analytical Batch: XFC13048
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 11/07/16 19:43
Container ID: 1168788001-D

Prep Batch: XXX36645
Prep Method: SW3520C
Prep Date/Time: 11/04/16 08:20
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

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Results of **MW1-1016**

Client Sample ID: **MW1-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788001
Lab Project ID: 1168788

Collection Date: 10/26/16 16:40
Received Date: 10/27/16 09:38
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		11/01/16 07:53
Surrogates								
4-Bromofluorobenzene (surr)	91.3		50-150		%	1		11/01/16 07:53

Batch Information

Analytical Batch: VFC13442
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 11/01/16 07:53
Container ID: 1168788001-A

Prep Batch: VXX29894
Prep Method: SW5030B
Prep Date/Time: 10/31/16 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	1.69		0.500	0.150	ug/L	1		11/05/16 00:13
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/01/16 07:53
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/01/16 07:53
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/01/16 07:53
Toluene	0.500	U	1.00	0.310	ug/L	1		11/01/16 07:53
Surrogates								
1,4-Difluorobenzene (surr)	103		77-115		%	1		11/01/16 07:53

Batch Information

Analytical Batch: VFC13456
Analytical Method: SW8021B
Analyst: NRO
Analytical Date/Time: 11/05/16 00:13
Container ID: 1168788001-A

Prep Batch: VXX29929
Prep Method: SW5030B
Prep Date/Time: 11/04/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VFC13442
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 11/01/16 07:53
Container ID: 1168788001-A

Prep Batch: VXX29894
Prep Method: SW5030B
Prep Date/Time: 10/31/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **MW2-1016**

Client Sample ID: **MW2-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788002
Lab Project ID: 1168788

Collection Date: 10/26/16 17:30
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	1.19		0.0472	0.0142	ug/L	1		10/31/16 15:14
2-Methylnaphthalene	0.310		0.0472	0.0142	ug/L	1		10/31/16 15:14
Acenaphthene	0.189		0.0472	0.0142	ug/L	1		10/31/16 15:14
Acenaphthylene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Anthracene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Benzo(a)Anthracene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Benzo[a]pyrene	0.00945	U	0.0189	0.00585	ug/L	1		10/31/16 15:14
Benzo[b]Fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Benzo[g,h,i]perylene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Benzo[k]fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Chrysene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Dibenzo[a,h]anthracene	0.00945	U	0.0189	0.00585	ug/L	1		10/31/16 15:14
Fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Fluorene	0.0817		0.0472	0.0142	ug/L	1		10/31/16 15:14
Indeno[1,2,3-c,d] pyrene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Naphthalene	7.32		0.0943	0.0292	ug/L	1		10/31/16 15:14
Phenanthrene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Pyrene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:14
Surrogates								
2-Fluorobiphenyl (surr)	80.3		53-106		%	1		10/31/16 15:14
Terphenyl-d14 (surr)	87.1		58-132		%	1		10/31/16 15:14

Batch Information

Analytical Batch: XMS9727
Analytical Method: 8270D SIM LV (PAH)
Analyst: S.G
Analytical Date/Time: 10/31/16 15:14
Container ID: 1168788002-I

Prep Batch: XXX36611
Prep Method: SW3520C
Prep Date/Time: 10/28/16 09:52
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **MW2-1016**

Client Sample ID: **MW2-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788002
Lab Project ID: 1168788

Collection Date: 10/26/16 17:30
Received Date: 10/27/16 09:38
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	2.75		0.588	0.176	mg/L	1		11/07/16 20:03
Surrogates								
5a Androstane (surr)	86.4		50-150		%	1		11/07/16 20:03

Batch Information

Analytical Batch: XFC13048
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 11/07/16 20:03
Container ID: 1168788002-G

Prep Batch: XXX36645
Prep Method: SW3520C
Prep Date/Time: 11/04/16 08:20
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **MW2-1016**

Client Sample ID: **MW2-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788002
Lab Project ID: 1168788

Collection Date: 10/26/16 17:30
Received Date: 10/27/16 09:38
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	0.656		0.100	0.0310	mg/L	1		11/01/16 07:34
Surrogates								
4-Bromofluorobenzene (surr)	103		50-150		%	1		11/01/16 07:34

Batch Information

Analytical Batch: VFC13442
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 11/01/16 07:34
Container ID: 1168788002-A

Prep Batch: VXX29894
Prep Method: SW5030B
Prep Date/Time: 10/31/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **MW2-1016**

Client Sample ID: **MW2-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788002
Lab Project ID: 1168788

Collection Date: 10/26/16 17:30
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:00
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:00
1,1,2-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,2,4-Trimethylbenzene	8.70		1.00	0.310	ug/L	1		11/04/16 21:00
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:00
1,2-Dibromoethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,2-Dichloroethane	0.390	J	0.500	0.150	ug/L	1		11/04/16 21:00
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,3,5-Trimethylbenzene	5.35		1.00	0.310	ug/L	1		11/04/16 21:00
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:00
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:00
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:00
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:00
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
4-Isopropyltoluene	0.990	J	1.00	0.310	ug/L	1		11/04/16 21:00
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:00
Benzene	24.7		0.400	0.120	ug/L	1		11/04/16 21:00
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:00
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Bromomethane	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:00
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:00
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:00
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00

Results of **MW2-1016**

Client Sample ID: **MW2-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788002
Lab Project ID: 1168788

Collection Date: 10/26/16 17:30
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.300	ug/L	1		11/04/16 21:00
Chloromethane	2.37		1.00	0.310	ug/L	1		11/07/16 18:08
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:00
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:00
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Ethylbenzene	30.0		1.00	0.310	ug/L	1		11/04/16 21:00
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:00
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Isopropylbenzene (Cumene)	2.62		1.00	0.310	ug/L	1		11/04/16 21:00
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/04/16 21:00
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:00
Naphthalene	11.3		10.0	3.10	ug/L	1		11/04/16 21:00
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
n-Propylbenzene	3.75		1.00	0.310	ug/L	1		11/04/16 21:00
o-Xylene	5.93		1.00	0.310	ug/L	1		11/04/16 21:00
P & M -Xylene	53.7		2.00	0.620	ug/L	1		11/04/16 21:00
sec-Butylbenzene	0.520	J	1.00	0.310	ug/L	1		11/04/16 21:00
Styrene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Toluene	4.51		1.00	0.310	ug/L	1		11/04/16 21:00
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:00
Vinyl chloride	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:00
Xylenes (total)	59.6		3.00	1.00	ug/L	1		11/04/16 21:00
Surrogates								
1,2-Dichloroethane-D4 (surr)	104		81-118		%	1		11/04/16 21:00
4-Bromofluorobenzene (surr)	103		85-114		%	1		11/04/16 21:00
Toluene-d8 (surr)	98.6		89-112		%	1		11/04/16 21:00

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **MW2-1016**

Client Sample ID: **MW2-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788002
Lab Project ID: 1168788

Collection Date: 10/26/16 17:30
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS16373
Analytical Method: SW8260B
Analyst: TJT
Analytical Date/Time: 11/07/16 18:08
Container ID: 1168788002-F

Prep Batch: VXX29947
Prep Method: SW5030B
Prep Date/Time: 11/07/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS16367
Analytical Method: SW8260B
Analyst: TJT
Analytical Date/Time: 11/04/16 21:00
Container ID: 1168788002-D

Prep Batch: VXX29934
Prep Method: SW5030B
Prep Date/Time: 11/04/16 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: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788003
Lab Project ID: 1168788

Collection Date: 10/26/16 18:15
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	39.0		0.481	0.144	ug/L	10		10/31/16 16:36
2-Methylnaphthalene	42.3		0.481	0.144	ug/L	10		10/31/16 16:36
Acenaphthene	0.748		0.0481	0.0144	ug/L	1		10/31/16 15:34
Acenaphthylene	0.0240 U		0.0481	0.0144	ug/L	1		10/31/16 15:34
Anthracene	0.0514		0.0481	0.0144	ug/L	1		10/31/16 15:34
Benzo(a)Anthracene	0.0240 U		0.0481	0.0144	ug/L	1		10/31/16 15:34
Benzo[a]pyrene	0.00960 U		0.0192	0.00596	ug/L	1		10/31/16 15:34
Benzo[b]Fluoranthene	0.0240 U		0.0481	0.0144	ug/L	1		10/31/16 15:34
Benzo[g,h,i]perylene	0.0240 U		0.0481	0.0144	ug/L	1		10/31/16 15:34
Benzo[k]fluoranthene	0.0240 U		0.0481	0.0144	ug/L	1		10/31/16 15:34
Chrysene	0.0240 U		0.0481	0.0144	ug/L	1		10/31/16 15:34
Dibenzo[a,h]anthracene	0.00960 U		0.0192	0.00596	ug/L	1		10/31/16 15:34
Fluoranthene	0.0240 U		0.0481	0.0144	ug/L	1		10/31/16 15:34
Fluorene	1.62		0.0481	0.0144	ug/L	1		10/31/16 15:34
Indeno[1,2,3-c,d] pyrene	0.0240 U		0.0481	0.0144	ug/L	1		10/31/16 15:34
Naphthalene	48.4		0.962	0.298	ug/L	10		10/31/16 16:36
Phenanthrene	0.631		0.0481	0.0144	ug/L	1		10/31/16 15:34
Pyrene	0.0240 U		0.0481	0.0144	ug/L	1		10/31/16 15:34
Surrogates								
2-Fluorobiphenyl (surr)	71.8		53-106		%	1		10/31/16 15:34
Terphenyl-d14 (surr)	87.2		58-132		%	1		10/31/16 15:34

Batch Information

Analytical Batch: XMS9727
Analytical Method: 8270D SIM LV (PAH)
Analyst: S.G
Analytical Date/Time: 10/31/16 15:34
Container ID: 1168788003-I

Prep Batch: XXX36611
Prep Method: SW3520C
Prep Date/Time: 10/28/16 09:52
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS9727
Analytical Method: 8270D SIM LV (PAH)
Analyst: S.G
Analytical Date/Time: 10/31/16 16:36
Container ID: 1168788003-I

Prep Batch: XXX36611
Prep Method: SW3520C
Prep Date/Time: 10/28/16 09:52
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **MW3-1016**

Client Sample ID: **MW3-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788003
Lab Project ID: 1168788

Collection Date: 10/26/16 18:15
Received Date: 10/27/16 09:38
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	5.02		0.577	0.173	mg/L	1		11/07/16 20:24
Surrogates								
5a Androstane (surr)	89.5		50-150		%	1		11/07/16 20:24

Batch Information

Analytical Batch: XFC13048
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 11/07/16 20:24
Container ID: 1168788003-G

Prep Batch: XXX36645
Prep Method: SW3520C
Prep Date/Time: 11/04/16 08:20
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **MW3-1016**

Client Sample ID: **MW3-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788003
Lab Project ID: 1168788

Collection Date: 10/26/16 18:15
Received Date: 10/27/16 09:38
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	1.23		0.100	0.0310	mg/L	1		11/01/16 07:15
Surrogates								
4-Bromofluorobenzene (surr)	202	*	50-150		%	1		11/01/16 07:15

Batch Information

Analytical Batch: VFC13442
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 11/01/16 07:15
Container ID: 1168788003-A

Prep Batch: VXX29894
Prep Method: SW5030B
Prep Date/Time: 10/31/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **MW3-1016**

Client Sample ID: **MW3-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788003
Lab Project ID: 1168788

Collection Date: 10/26/16 18:15
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:17
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:17
1,1,2-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,2,4-Trimethylbenzene	163		10.0	3.10	ug/L	10		11/04/16 19:55
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:17
1,2-Dibromoethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:17
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,3,5-Trimethylbenzene	64.0		1.00	0.310	ug/L	1		11/04/16 21:17
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:17
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:17
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
2-Butanone (MEK)	16.4		10.0	3.10	ug/L	1		11/04/16 21:17
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:17
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
4-Isopropyltoluene	6.38		1.00	0.310	ug/L	1		11/04/16 21:17
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:17
Benzene	0.500		0.400	0.120	ug/L	1		11/04/16 21:17
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:17
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Bromomethane	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:17
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:17
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:17
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **MW3-1016**

Client Sample ID: **MW3-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788003
Lab Project ID: 1168788

Collection Date: 10/26/16 18:15
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.300	ug/L	1		11/04/16 21:17
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:17
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:17
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Ethylbenzene	33.9		1.00	0.310	ug/L	1		11/04/16 21:17
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:17
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Isopropylbenzene (Cumene)	25.9		1.00	0.310	ug/L	1		11/04/16 21:17
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/04/16 21:17
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:17
Naphthalene	74.3	J	100	31.0	ug/L	10		11/04/16 19:55
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
n-Propylbenzene	39.3		1.00	0.310	ug/L	1		11/04/16 21:17
o-Xylene	68.6		10.0	3.10	ug/L	10		11/04/16 19:55
P & M -Xylene	178		20.0	6.20	ug/L	10		11/04/16 19:55
sec-Butylbenzene	6.69		1.00	0.310	ug/L	1		11/04/16 21:17
Styrene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Toluene	0.600	J	1.00	0.310	ug/L	1		11/04/16 21:17
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:17
Vinyl chloride	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:17
Xylenes (total)	246		30.0	10.0	ug/L	10		11/04/16 19:55
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		81-118		%	1		11/04/16 21:17
1,2-Dichloroethane-D4 (surr)	108		81-118		%	10		11/04/16 19:55
4-Bromofluorobenzene (surr)	102		85-114		%	10		11/04/16 19:55
4-Bromofluorobenzene (surr)	101		85-114		%	1		11/04/16 21:17
Toluene-d8 (surr)	100		89-112		%	10		11/04/16 19:55
Toluene-d8 (surr)	98.2		89-112		%	1		11/04/16 21:17

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **MW3-1016**

Client Sample ID: **MW3-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788003
Lab Project ID: 1168788

Collection Date: 10/26/16 18:15
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed

Batch Information

Analytical Batch: VMS16367
Analytical Method: SW8260B
Analyst: TJT
Analytical Date/Time: 11/04/16 19:55
Container ID: 1168788003-D

Prep Batch: VXX29934
Prep Method: SW5030B
Prep Date/Time: 11/04/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS16367
Analytical Method: SW8260B
Analyst: TJT
Analytical Date/Time: 11/04/16 21:17
Container ID: 1168788003-D

Prep Batch: VXX29934
Prep Method: SW5030B
Prep Date/Time: 11/04/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **DUP-1016**

Client Sample ID: **DUP-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788004
Lab Project ID: 1168788

Collection Date: 10/26/16 17:50
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	39.8		0.472	0.142	ug/L	10		10/31/16 16:56
2-Methylnaphthalene	42.7		0.472	0.142	ug/L	10		10/31/16 16:56
Acenaphthene	0.767		0.0472	0.0142	ug/L	1		10/31/16 15:55
Acenaphthylene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:55
Anthracene	0.0573		0.0472	0.0142	ug/L	1		10/31/16 15:55
Benzo(a)Anthracene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:55
Benzo[a]pyrene	0.00945	U	0.0189	0.00585	ug/L	1		10/31/16 15:55
Benzo[b]Fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:55
Benzo[g,h,i]perylene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:55
Benzo[k]fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:55
Chrysene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:55
Dibenzo[a,h]anthracene	0.00945	U	0.0189	0.00585	ug/L	1		10/31/16 15:55
Fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:55
Fluorene	1.54		0.0472	0.0142	ug/L	1		10/31/16 15:55
Indeno[1,2,3-c,d] pyrene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:55
Naphthalene	50.0		0.943	0.292	ug/L	10		10/31/16 16:56
Phenanthrene	0.635		0.0472	0.0142	ug/L	1		10/31/16 15:55
Pyrene	0.0236	U	0.0472	0.0142	ug/L	1		10/31/16 15:55
Surrogates								
2-Fluorobiphenyl (surr)	72.9		53-106		%	1		10/31/16 15:55
Terphenyl-d14 (surr)	89.3		58-132		%	1		10/31/16 15:55

Batch Information

Analytical Batch: XMS9727
Analytical Method: 8270D SIM LV (PAH)
Analyst: S.G
Analytical Date/Time: 10/31/16 15:55
Container ID: 1168788004-I

Prep Batch: XXX36611
Prep Method: SW3520C
Prep Date/Time: 10/28/16 09:52
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS9727
Analytical Method: 8270D SIM LV (PAH)
Analyst: S.G
Analytical Date/Time: 10/31/16 16:56
Container ID: 1168788004-I

Prep Batch: XXX36611
Prep Method: SW3520C
Prep Date/Time: 10/28/16 09:52
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **DUP-1016**

Client Sample ID: **DUP-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788004
Lab Project ID: 1168788

Collection Date: 10/26/16 17:50
Received Date: 10/27/16 09:38
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	5.99		0.566	0.170	mg/L	1		11/07/16 20:45
Surrogates								
5a Androstane (surr)	90.7		50-150		%	1		11/07/16 20:45

Batch Information

Analytical Batch: XFC13048
Analytical Method: AK102
Analyst: CRA
Analytical Date/Time: 11/07/16 20:45
Container ID: 1168788004-G

Prep Batch: XXX36645
Prep Method: SW3520C
Prep Date/Time: 11/04/16 08:20
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **DUP-1016**

Client Sample ID: **DUP-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788004
Lab Project ID: 1168788

Collection Date: 10/26/16 17:50
Received Date: 10/27/16 09:38
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	1.25		0.100	0.0310	mg/L	1		11/01/16 06:56
Surrogates								
4-Bromofluorobenzene (surr)	201	*	50-150		%	1		11/01/16 06:56

Batch Information

Analytical Batch: VFC13442
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 11/01/16 06:56
Container ID: 1168788004-A

Prep Batch: VXX29894
Prep Method: SW5030B
Prep Date/Time: 10/31/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **DUP-1016**

Client Sample ID: **DUP-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788004
Lab Project ID: 1168788

Collection Date: 10/26/16 17:50
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:33
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:33
1,1,2-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,2,4-Trimethylbenzene	161		10.0	3.10	ug/L	10		11/04/16 20:11
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:33
1,2-Dibromoethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:33
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,3,5-Trimethylbenzene	62.2		1.00	0.310	ug/L	1		11/04/16 21:33
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:33
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:33
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
2-Butanone (MEK)	15.9		10.0	3.10	ug/L	1		11/04/16 21:33
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:33
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
4-Isopropyltoluene	6.23		1.00	0.310	ug/L	1		11/04/16 21:33
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:33
Benzene	0.470		0.400	0.120	ug/L	1		11/04/16 21:33
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:33
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
Bromomethane	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:33
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/04/16 21:33
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/04/16 21:33
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 21:33

Results of **DUP-1016**

Client Sample ID: **DUP-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788004
Lab Project ID: 1168788

Collection Date: 10/26/16 17:50
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.300	ug/L	1		11/04/16 21:33
Chloromethane	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		11/04/16 21:33
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		11/04/16 21:33
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
Ethylbenzene	34.2		1.00	0.310	ug/L	1		11/04/16 21:33
Freon-113	5.00 U		10.0	3.10	ug/L	1		11/04/16 21:33
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
Isopropylbenzene (Cumene)	24.8		1.00	0.310	ug/L	1		11/04/16 21:33
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		11/04/16 21:33
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		11/04/16 21:33
Naphthalene	74.4 J		100	31.0	ug/L	10		11/04/16 20:11
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
n-Propylbenzene	37.7		1.00	0.310	ug/L	1		11/04/16 21:33
o-Xylene	68.2		10.0	3.10	ug/L	10		11/04/16 20:11
P & M -Xylene	174		20.0	6.20	ug/L	10		11/04/16 20:11
sec-Butylbenzene	6.59		1.00	0.310	ug/L	1		11/04/16 21:33
Styrene	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
Toluene	0.580 J		1.00	0.310	ug/L	1		11/04/16 21:33
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		11/04/16 21:33
Vinyl chloride	0.500 U		1.00	0.310	ug/L	1		11/04/16 21:33
Xylenes (total)	242		30.0	10.0	ug/L	10		11/04/16 20:11
Surrogates								
1,2-Dichloroethane-D4 (surr)	104		81-118		%	1		11/04/16 21:33
1,2-Dichloroethane-D4 (surr)	107		81-118		%	10		11/04/16 20:11
4-Bromofluorobenzene (surr)	102		85-114		%	10		11/04/16 20:11
4-Bromofluorobenzene (surr)	100		85-114		%	1		11/04/16 21:33
Toluene-d8 (surr)	98.1		89-112		%	10		11/04/16 20:11
Toluene-d8 (surr)	98		89-112		%	1		11/04/16 21:33

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **DUP-1016**

Client Sample ID: **DUP-1016**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788004
Lab Project ID: 1168788

Collection Date: 10/26/16 17:50
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed

Batch Information

Analytical Batch: VMS16367
Analytical Method: SW8260B
Analyst: TJT
Analytical Date/Time: 11/04/16 20:11
Container ID: 1168788004-D

Prep Batch: VXX29934
Prep Method: SW5030B
Prep Date/Time: 11/04/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS16367
Analytical Method: SW8260B
Analyst: TJT
Analytical Date/Time: 11/04/16 21:33
Container ID: 1168788004-D

Prep Batch: VXX29934
Prep Method: SW5030B
Prep Date/Time: 11/04/16 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: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788005
Lab Project ID: 1168788

Collection Date: 10/26/16 12:00
Received Date: 10/27/16 09:38
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	0.0362	J	0.100	0.0310	mg/L	1		11/01/16 06:18
Surrogates								
4-Bromofluorobenzene (surr)	91.2		50-150		%	1		11/01/16 06:18

Batch Information

Analytical Batch: VFC13442
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 11/01/16 06:18
Container ID: 1168788005-A

Prep Batch: VXX29894
Prep Method: SW5030B
Prep Date/Time: 10/31/16 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: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788005
Lab Project ID: 1168788

Collection Date: 10/26/16 12:00
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 18:33
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 18:33
1,1,2-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/04/16 18:33
1,2-Dibromoethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 18:33
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/04/16 18:33
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/04/16 18:33
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/04/16 18:33
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/04/16 18:33
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/04/16 18:33
Benzene	0.200	U	0.400	0.120	ug/L	1		11/04/16 18:33
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/04/16 18:33
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
Bromomethane	5.00	U	10.0	3.10	ug/L	1		11/04/16 18:33
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/04/16 18:33
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/04/16 18:33
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/04/16 18:33

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788005
Lab Project ID: 1168788

Collection Date: 10/26/16 12:00
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.300	ug/L	1		11/04/16 18:33
Chloromethane	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		11/04/16 18:33
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		11/04/16 18:33
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Freon-113	5.00 U		10.0	3.10	ug/L	1		11/04/16 18:33
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		11/04/16 18:33
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		11/04/16 18:33
Naphthalene	5.00 U		10.0	3.10	ug/L	1		11/04/16 18:33
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
o-Xylene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		11/04/16 18:33
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Styrene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Toluene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		11/04/16 18:33
Vinyl chloride	0.500 U		1.00	0.310	ug/L	1		11/04/16 18:33
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		11/04/16 18:33
Surrogates								
1,2-Dichloroethane-D4 (surr)	108		81-118		%	1		11/04/16 18:33
4-Bromofluorobenzene (surr)	105		85-114		%	1		11/04/16 18:33
Toluene-d8 (surr)	98.8		89-112		%	1		11/04/16 18:33

Print Date: 11/14/2016 2:14:38PM

J flagging is activated

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **1016 Kobuk Feed & Fuel**
Lab Sample ID: 1168788005
Lab Project ID: 1168788

Collection Date: 10/26/16 12:00
Received Date: 10/27/16 09:38
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS16367
Analytical Method: SW8260B
Analyst: TJT
Analytical Date/Time: 11/04/16 18:33
Container ID: 1168788005-C

Prep Batch: VXX29934
Prep Method: SW5030B
Prep Date/Time: 11/04/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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

Method Blank

Blank ID: MB for HBN 1747373 [VXX/29894]
Blank Lab ID: 1362840

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168788001, 1168788002, 1168788003, 1168788004, 1168788005

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Ethylbenzene	0.000500U	0.00100	0.000310	mg/L
Gasoline Range Organics	0.0513J	0.100	0.0310	mg/L
o-Xylene	0.000500U	0.00100	0.000310	mg/L
P & M -Xylene	0.00100U	0.00200	0.000620	mg/L
Toluene	0.000500U	0.00100	0.000310	mg/L
Surrogates				
1,4-Difluorobenzene (surr)	101	77-115		%
4-Bromofluorobenzene (surr)	91.7	50-150		%

Batch Information

Analytical Batch: VFC13442
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/31/2016 11:21:00PM

Prep Batch: VXX29894
Prep Method: SW5030B
Prep Date/Time: 10/31/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/14/2016 2:14:42PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1168788 [VXX29894]
Blank Spike Lab ID: 1362841
Date Analyzed: 10/31/2016 22:43

Spike Duplicate ID: LCSD for HBN 1168788 [VXX29894]
Spike Duplicate Lab ID: 1362842
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168788001, 1168788002, 1168788003, 1168788004, 1168788005

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Ethylbenzene	0.100	0.107	107	0.100	0.106	106	(75-125)	1.30	(< 20)
o-Xylene	0.100	0.0982	98	0.100	0.0944	94	(80-120)	3.90	(< 20)
P & M -Xylene	0.200	0.204	102	0.200	0.199	100	(75-130)	2.50	(< 20)
Toluene	0.100	0.107	107	0.100	0.110	110	(75-120)	3.00	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	0.0500	112	112	0.0500	113	113	(77-115)	0.46	

Batch Information

Analytical Batch: **VFC13442**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX29894**
Prep Method: **SW5030B**
Prep Date/Time: **10/31/2016 06:00**
Spike Init Wt./Vol.: 0.100 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 0.100 mg/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

Blank Spike Summary

Blank Spike ID: LCS for HBN 1168788 [VXX29894]
Blank Spike Lab ID: 1362843
Date Analyzed: 10/31/2016 23:02

Spike Duplicate ID: LCSD for HBN 1168788 [VXX29894]
Spike Duplicate Lab ID: 1362844
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168788001, 1168788002, 1168788003, 1168788004, 1168788005

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	1.05	105	1.00	1.00	100	(60-120)	4.20	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	98.9	99	0.0500	93.9	94	(50-150)	5.20	

Batch Information

Analytical Batch: **VFC13442**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX29894**
Prep Method: **SW5030B**
Prep Date/Time: **10/31/2016 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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200 West Potter Drive Anchorage, AK 95518
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Method Blank

Blank ID: MB for HBN 1747373 [VXX/29894]
Blank Lab ID: 1362840

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168788001, 1168788002, 1168788003, 1168788004, 1168788005

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
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)	101	77-115		%

Batch Information

Analytical Batch: VFC13442
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/31/2016 11:21:00PM

Prep Batch: VXX29894
Prep Method: SW5030B
Prep Date/Time: 10/31/2016 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 1168788 [VXX29894]
Blank Spike Lab ID: 1362841
Date Analyzed: 10/31/2016 22:43

Spike Duplicate ID: LCSD for HBN 1168788 [VXX29894]
Spike Duplicate Lab ID: 1362842
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168788001, 1168788002, 1168788003, 1168788004, 1168788005

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Ethylbenzene	100	107	107	100	106	106	(75-125)	1.30	(< 20)
o-Xylene	100	98.2	98	100	94.4	94	(80-120)	3.90	(< 20)
P & M -Xylene	200	204	102	200	199	100	(75-130)	2.50	(< 20)
Toluene	100	107	107	100	110	110	(75-120)	3.00	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	112	112	50	113	113	(77-115)	0.46	

Batch Information

Analytical Batch: **VFC13442**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX29894**
Prep Method: **SW5030B**
Prep Date/Time: **10/31/2016 06:00**
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1747717 [VXX/29929]
Blank Lab ID: 1363886

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168788001

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.250U	0.500	0.150	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	84.1	77-115		%

Batch Information

Analytical Batch: VFC13456
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: NRO
Analytical Date/Time: 11/4/2016 10:40:00PM

Prep Batch: VXX29929
Prep Method: SW5030B
Prep Date/Time: 11/4/2016 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 1168788 [VXX29929]
Blank Spike Lab ID: 1363887
Date Analyzed: 11/05/2016 01:09

Spike Duplicate ID: LCSD for HBN 1168788 [VXX29929]
Spike Duplicate Lab ID: 1363888
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168788001

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	96.1	96	100	90.0	90	(80-120)	6.50	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	91.8	92	50	92.4	92	(77-115)	0.65	

Batch Information

Analytical Batch: **VFC13456**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890A PID/FID**
Analyst: **NRO**

Prep Batch: **VXX29929**
Prep Method: **SW5030B**
Prep Date/Time: **11/04/2016 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 1747871 [VXX/29934]
Blank Lab ID: 1364079

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168788002, 1168788003, 1168788004, 1168788005

Results by **SW8260B**

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.500U	1.00	0.310	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	5.00U	10.0	3.10	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.300	ug/L

Method Blank

Blank ID: MB for HBN 1747871 [VXX/29934]
Blank Lab ID: 1364079

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168788002, 1168788003, 1168788004, 1168788005

Results by **SW8260B**

Parameter	Results	LOQ/CL	DL	Units
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	5.00U	10.0	3.10	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.500U	1.00	0.310	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	108	81-118		%
4-Bromofluorobenzene (surr)	103	85-114		%
Toluene-d8 (surr)	99	89-112		%

Method Blank

Blank ID: MB for HBN 1747871 [VXX/29934]
Blank Lab ID: 1364079

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168788002, 1168788003, 1168788004, 1168788005

Results by **SW8260B**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS16367
Analytical Method: SW8260B
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: TJT
Analytical Date/Time: 11/4/2016 10:36:00AM

Prep Batch: VXX29934
Prep Method: SW5030B
Prep Date/Time: 11/4/2016 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 1168788 [VXX29934]
Blank Spike Lab ID: 1364080
Date Analyzed: 11/04/2016 11:07

Spike Duplicate ID: LCSD for HBN 1168788 [VXX29934]
Spike Duplicate Lab ID: 1364081
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168788002, 1168788003, 1168788004, 1168788005

Results by **SW8260B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	30	31.2	104	30	32.5	108	(78-124)	4.10	(< 20)
1,1,1-Trichloroethane	30	37.2	124	30	38.2	127	(74-131)	2.70	(< 20)
1,1,2,2-Tetrachloroethane	30	34.1	114	30	35.2	117	(71-121)	3.10	(< 20)
1,1,2-Trichloroethane	30	33.5	112	30	34.7	116	(80-119)	3.70	(< 20)
1,1-Dichloroethane	30	33.1	110	30	34.2	114	(77-125)	3.00	(< 20)
1,1-Dichloroethene	30	38.0	127	30	39.4	131	(71-131)	3.60	(< 20)
1,1-Dichloropropene	30	35.5	118	30	36.5	122	(79-125)	2.90	(< 20)
1,2,3-Trichlorobenzene	30	31.6	105	30	34.2	114	(69-129)	7.70	(< 20)
1,2,3-Trichloropropane	30	34.1	114	30	35.5	118	(73-122)	4.10	(< 20)
1,2,4-Trichlorobenzene	30	32.0	107	30	33.7	112	(69-130)	5.20	(< 20)
1,2,4-Trimethylbenzene	30	33.9	113	30	34.8	116	(79-124)	2.60	(< 20)
1,2-Dibromo-3-chloropropane	30	32.4	108	30	34.1	114	(62-128)	5.10	(< 20)
1,2-Dibromoethane	30	33.9	113	30	35.1	117	(77-121)	3.50	(< 20)
1,2-Dichlorobenzene	30	32.6	109	30	34.0	113	(80-119)	4.00	(< 20)
1,2-Dichloroethane	30	32.5	108	30	33.5	112	(73-128)	3.00	(< 20)
1,2-Dichloropropane	30	32.6	109	30	33.8	113	(78-122)	3.80	(< 20)
1,3,5-Trimethylbenzene	30	34.0	113	30	35.5	118	(75-124)	4.50	(< 20)
1,3-Dichlorobenzene	30	32.4	108	30	34.1	114	(80-119)	5.00	(< 20)
1,3-Dichloropropane	30	33.4	111	30	34.8	116	(80-119)	4.00	(< 20)
1,4-Dichlorobenzene	30	33.0	110	30	34.6	115	(79-118)	4.70	(< 20)
2,2-Dichloropropane	30	33.4	111	30	34.5	115	(60-139)	3.10	(< 20)
2-Butanone (MEK)	90	86.5	96	90	91.4	102	(56-143)	5.50	(< 20)
2-Chlorotoluene	30	31.0	103	30	32.2	107	(79-122)	3.90	(< 20)
2-Hexanone	90	83.8	93	90	88.3	98	(57-139)	5.10	(< 20)
4-Chlorotoluene	30	34.1	114	30	35.7	119	(78-122)	4.60	(< 20)
4-Isopropyltoluene	30	32.3	108	30	33.4	111	(77-127)	3.50	(< 20)
4-Methyl-2-pentanone (MIBK)	90	84.1	93	90	90.0	100	(67-130)	6.80	(< 20)
Benzene	30	33.5	112	30	34.6	115	(79-120)	3.10	(< 20)
Bromobenzene	30	32.6	109	30	34.0	113	(80-120)	4.30	(< 20)
Bromochloromethane	30	31.8	106	30	33.0	110	(78-123)	3.60	(< 20)
Bromodichloromethane	30	35.1	117	30	36.6	122	(79-125)	4.20	(< 20)
Bromoform	30	32.4	108	30	33.1	110	(66-130)	2.20	(< 20)
Bromomethane	30	31.3	104	30	28.6	95	(53-141)	9.00	(< 20)
Carbon disulfide	45	56.6	126	45	58.8	131	(64-133)	3.80	(< 20)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1168788 [VXX29934]
Blank Spike Lab ID: 1364080
Date Analyzed: 11/04/2016 11:07

Spike Duplicate ID: LCSD for HBN 1168788 [VXX29934]
Spike Duplicate Lab ID: 1364081
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168788002, 1168788003, 1168788004, 1168788005

Results by **SW8260B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Carbon tetrachloride	30	33.2	111	30	34.3	114	(72-136)	3.10	(< 20)
Chlorobenzene	30	32.4	108	30	33.8	113	(82-118)	4.10	(< 20)
Chloroethane	30	33.8	113	30	33.1	110	(60-138)	2.10	(< 20)
Chloroform	30	34.1	114	30	35.2	117	(79-124)	3.20	(< 20)
Chloromethane	30	23.9	80	30	28.0	93	(50-139)	15.50	(< 20)
cis-1,2-Dichloroethene	30	32.4	108	30	33.6	112	(78-123)	3.80	(< 20)
cis-1,3-Dichloropropene	30	31.0	103	30	32.3	108	(75-124)	4.10	(< 20)
Dibromochloromethane	30	31.7	106	30	32.7	109	(74-126)	3.00	(< 20)
Dibromomethane	30	33.7	112	30	35.1	117	(79-123)	4.00	(< 20)
Dichlorodifluoromethane	30	32.2	107	30	33.0	110	(32-152)	2.50	(< 20)
Ethylbenzene	30	34.0	113	30	35.1	117	(79-121)	3.10	(< 20)
Freon-113	45	53.0	118	45	54.6	121	(70-136)	2.90	(< 20)
Hexachlorobutadiene	30	32.0	107	30	33.4	111	(66-134)	4.30	(< 20)
Isopropylbenzene (Cumene)	30	34.4	115	30	35.6	119	(72-131)	3.50	(< 20)
Methylene chloride	30	35.9	120	30	35.0	117	(74-124)	2.50	(< 20)
Methyl-t-butyl ether	45	46.4	103	45	48.6	108	(71-124)	4.70	(< 20)
Naphthalene	30	28.9	96	30	31.9	106	(61-128)	10.10	(< 20)
n-Butylbenzene	30	33.1	110	30	34.0	113	(75-128)	2.70	(< 20)
n-Propylbenzene	30	34.8	116	30	36.3	121	(76-126)	4.20	(< 20)
o-Xylene	30	33.9	113	30	35.3	118	(78-122)	4.10	(< 20)
P & M -Xylene	60	67.8	113	60	71.3	119	(80-121)	5.10	(< 20)
sec-Butylbenzene	30	32.7	109	30	33.7	112	(77-126)	3.20	(< 20)
Styrene	30	32.7	109	30	34.1	114	(78-123)	4.20	(< 20)
tert-Butylbenzene	30	31.8	106	30	32.2	107	(78-124)	1.30	(< 20)
Tetrachloroethene	30	33.9	113	30	35.7	119	(74-129)	5.10	(< 20)
Toluene	30	32.5	108	30	33.7	112	(80-121)	3.60	(< 20)
trans-1,2-Dichloroethene	30	34.5	115	30	34.4	115	(75-124)	0.29	(< 20)
trans-1,3-Dichloropropene	30	34.5	115	30	35.8	119	(73-127)	3.70	(< 20)
Trichloroethene	30	33.9	113	30	35.1	117	(79-123)	3.50	(< 20)
Trichlorofluoromethane	30	34.5	115	30	35.4	118	(65-141)	2.50	(< 20)
Vinyl acetate	30	29.8	99	30	31.1	104	(54-146)	4.20	(< 20)
Vinyl chloride	30	36.6	122	30	37.8	126	(58-137)	3.30	(< 20)
Xylenes (total)	90	102	113	90	107	118	(79-121)	4.70	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1168788 [VXX29934]
Blank Spike Lab ID: 1364080
Date Analyzed: 11/04/2016 11:07

Spike Duplicate ID: LCSD for HBN 1168788 [VXX29934]
Spike Duplicate Lab ID: 1364081
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168788002, 1168788003, 1168788004, 1168788005

Results by **SW8260B**

	Blank Spike (%)			Spike Duplicate (%)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	105	105	30	104	104	(81-118)	0.67	
4-Bromofluorobenzene (surr)	30	102	102	30	99.7	100	(85-114)	2.20	
Toluene-d8 (surr)	30	98.3	98	30	97.7	98	(89-112)	0.65	

Batch Information

Analytical Batch: **VMS16367**
Analytical Method: **SW8260B**
Instrument: **VSA Agilent GC/MS 7890B/5977A**
Analyst: **TJT**

Prep Batch: **VXX29934**
Prep Method: **SW5030B**
Prep Date/Time: **11/04/2016 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1747961 [VXX/29947]
Blank Lab ID: 1364256

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168788002

Results by **SW8260B**

Parameter	Results	LOQ/CL	DL	Units
Chloromethane	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	88.9	81-118		%
4-Bromofluorobenzene (surr)	98.6	85-114		%
Toluene-d8 (surr)	107	89-112		%

Batch Information

Analytical Batch: VMS16373
Analytical Method: SW8260B
Instrument: VPA 780/5975 GC/MS
Analyst: TJT
Analytical Date/Time: 11/7/2016 10:38:00AM

Prep Batch: VXX29947
Prep Method: SW5030B
Prep Date/Time: 11/7/2016 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 1168788 [VXX29947]
Blank Spike Lab ID: 1364257
Date Analyzed: 11/07/2016 11:40

Spike Duplicate ID: LCSD for HBN 1168788 [VXX29947]
Spike Duplicate Lab ID: 1364258
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168788002

Results by **SW8260B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Chloromethane	30	29.4	98	30	32.0	107	(50-139)	8.40	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	86.1	86	30	92.6	93	(81-118)	7.20	
4-Bromofluorobenzene (surr)	30	102	102	30	102	102	(85-114)	0.20	
Toluene-d8 (surr)	30	101	101	30	97.2	97	(89-112)	3.70	

Batch Information

Analytical Batch: **VMS16373**
Analytical Method: **SW8260B**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **TJT**

Prep Batch: **VXX29947**
Prep Method: **SW5030B**
Prep Date/Time: **11/07/2016 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1747026 [XXX/36611]
Blank Lab ID: 1362201

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168788002, 1168788003, 1168788004

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

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0184J	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Fluorobiphenyl (surr)	87.5	53-106		%
Terphenyl-d14 (surr)	89.5	58-132		%

Batch Information

Analytical Batch: XMS9727
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: S.G
Analytical Date/Time: 10/31/2016 11:07:00AM

Prep Batch: XXX36611
Prep Method: SW3520C
Prep Date/Time: 10/28/2016 9:52:09AM
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 1168788 [XXX36611]
Blank Spike Lab ID: 1362202
Date Analyzed: 10/31/2016 11:28

Spike Duplicate ID: LCSD for HBN 1168788 [XXX36611]
Spike Duplicate Lab ID: 1362203
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168788002, 1168788003, 1168788004

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

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.89	94	2	1.86	93	(41-115)	1.20	(< 20)
2-Methylnaphthalene	2	1.83	92	2	1.81	91	(39-114)	1.30	(< 20)
Acenaphthene	2	2.09	105	2	2.05	103	(48-114)	1.90	(< 20)
Acenaphthylene	2	1.79	90	2	1.79	90	(35-121)	0.12	(< 20)
Anthracene	2	1.66	83	2	1.65	82	(53-119)	0.62	(< 20)
Benzo(a)Anthracene	2	1.76	88	2	1.72	86	(59-120)	2.40	(< 20)
Benzo[a]pyrene	2	1.82	91	2	1.79	90	(53-120)	1.70	(< 20)
Benzo[b]Fluoranthene	2	1.68	84	2	1.68	84	(53-126)	0.38	(< 20)
Benzo[g,h,i]perylene	2	1.79	89	2	1.82	91	(44-128)	1.80	(< 20)
Benzo[k]fluoranthene	2	1.64	82	2	1.67	83	(54-125)	1.50	(< 20)
Chrysene	2	1.86	93	2	1.82	91	(57-120)	2.30	(< 20)
Dibenzo[a,h]anthracene	2	1.83	92	2	1.86	93	(44-131)	1.30	(< 20)
Fluoranthene	2	1.86	93	2	1.75	87	(58-120)	6.20	(< 20)
Fluorene	2	1.75	88	2	1.72	86	(50-118)	2.00	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.80	90	2	1.83	92	(48-130)	1.50	(< 20)
Naphthalene	2	1.89	95	2	1.89	95	(43-114)	0.09	(< 20)
Phenanthrene	2	1.64	82	2	1.62	81	(53-115)	0.78	(< 20)
Pyrene	2	1.98	99	2	1.84	92	(53-121)	7.20	(< 20)
Surrogates									
2-Fluorobiphenyl (surr)	2	83.5	84	2	86.8	87	(53-106)	3.80	
Terphenyl-d14 (surr)	2	89.4	89	2	84.6	85	(58-132)	5.50	

Batch Information

Analytical Batch: **XMS9727**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **SVA Agilent 780/5975 GC/MS**
Analyst: **S.G**

Prep Batch: **XXX36611**
Prep Method: **SW3520C**
Prep Date/Time: **10/28/2016 09:52**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 11/14/2016 2:15:02PM

Method Blank

Blank ID: MB for HBN 1747617 [XXX/36645]
Blank Lab ID: 1363636

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1168788001, 1168788002, 1168788003, 1168788004

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	87.2	60-120		%

Batch Information

Analytical Batch: XFC13048
Analytical Method: AK102
Instrument: HP 7890A FID SV E F
Analyst: CRA
Analytical Date/Time: 11/7/2016 3:34:00PM

Prep Batch: XXX36645
Prep Method: SW3520C
Prep Date/Time: 11/4/2016 8:20:50AM
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 1168788 [XXX36645]
Blank Spike Lab ID: 1363637
Date Analyzed: 11/10/2016 17:13

Spike Duplicate ID: LCSD for HBN 1168788 [XXX36645]
Spike Duplicate Lab ID: 1363638
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1168788001, 1168788002, 1168788003, 1168788004

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	18.4	92	20	19.0	95	(75-125)	3.10	(< 20)
Surrogates									
5a Androstane (surr)	0.4	99.3	99	0.4	104	104	(60-120)	4.90	

Batch Information

Analytical Batch: **XFC13047**
Analytical Method: **AK102**
Instrument: **HP 7890A FID SV E F**
Analyst: **CRA**

Prep Batch: **XXX36645**
Prep Method: **SW3520C**
Prep Date/Time: **11/04/2016 08:20**
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
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ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

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

1168788

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: SGS
Address: 3180 Peger Rd #190, Fairbanks, AK 99709 (907) 474-8656

Project Name: Kobuk Feed & Fuel 1016
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)

Sample Identification	Sampling Date/ Time		Preservative: HCL	HCL	HCL	HCL	N/A							Matrix (W,S,O)	# of Cont.	Location / Comments	Lab ID
			Requested Analyses: AK 101 GRO	AK 101/8021B GRO/BTEX	8260B VOC's	AK 102 DRO	EPA 8270DSIM PAH										
1 MW1-1016	09/22/15	1640		X		X								W	5		(1) A-E
2 MW2-1016	09/22/15	1730	X		X	X	X							W	10		(2) A-J
3 MW3-1016	09/22/15	1815	X		X	X	X							W	10		(3) A-J
4 DUP-1016	09/22/15	1750	X		X	X	X							W	10		(4) A-J
5 Trip Blank	09/22/15	1200	X		X									W	4		(5) A-D
6																	
7																	
8																	
9																	
10																	

Released By:
Print Name: Dustin Stahl Firm: ARES Date: 10/26/2016 Time:

Received By:
Print Name: Nicole Warner Firm: SGS Date: 10/26/16 Time: 1320

Released By:
Print Name: Nicole Warner Firm: SGS Date: 10/26/16 Time: 1530

Received By:
Print Name: Nicholas Wells Firm: SGS Date: 10/27/16 Time: 09:38

Additional Remarks:

Temp: 3.5

COC REV 02/2008

Page 1 of 1

ANC: CS: 1F, 1B TB: 1.6 #205

SGS

1168788

FAIRBANKS SAMPLE RECEIPT FORM

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

Review Criteria:	Condition:	Comments/Actions Taken
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No (N/A) (Yes) No N/A	□*Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C) *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ 3.5 w/Therm. ID: 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

1168788

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 @ 1.6 °C Therm ID: 205
		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	Trip Blank has Limited volume.
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 date is 9/22/15 on the COC. It is 10/26/16 on the containers. Samples have been logged in per the containers.

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1168788001-A	HCL to pH < 2	OK			
1168788001-B	HCL to pH < 2	OK			
1168788001-C	HCL to pH < 2	OK			
1168788001-D	HCL to pH < 2	OK			
1168788001-E	HCL to pH < 2	OK			
1168788002-A	HCL to pH < 2	OK			
1168788002-B	HCL to pH < 2	OK			
1168788002-C	HCL to pH < 2	OK			
1168788002-D	HCL to pH < 2	OK			
1168788002-E	HCL to pH < 2	OK			
1168788002-F	HCL to pH < 2	OK			
1168788002-G	HCL to pH < 2	OK			
1168788002-H	HCL to pH < 2	OK			
1168788002-I	No Preservative Required	OK			
1168788002-J	No Preservative Required	OK			
1168788003-A	HCL to pH < 2	OK			
1168788003-B	HCL to pH < 2	OK			
1168788003-C	HCL to pH < 2	OK			
1168788003-D	HCL to pH < 2	OK			
1168788003-E	HCL to pH < 2	OK			
1168788003-F	HCL to pH < 2	OK			
1168788003-G	HCL to pH < 2	OK			
1168788003-H	HCL to pH < 2	OK			
1168788003-I	No Preservative Required	OK			
1168788003-J	No Preservative Required	OK			
1168788004-A	HCL to pH < 2	OK			
1168788004-B	HCL to pH < 2	OK			
1168788004-C	HCL to pH < 2	OK			
1168788004-D	HCL to pH < 2	OK			
1168788004-E	HCL to pH < 2	OK			
1168788004-F	HCL to pH < 2	OK			
1168788004-G	HCL to pH < 2	OK			
1168788004-H	HCL to pH < 2	OK			
1168788004-I	No Preservative Required	OK			
1168788004-J	No Preservative Required	OK			
1168788005-A	HCL to pH < 2	OK			
1168788005-B	HCL to pH < 2	OK			
1168788005-C	HCL to pH < 2	OK			
1168788005-D	HCL to pH < 2	OK			

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition

Container Condition Glossary

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

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM- The container was received damaged.
FR- The container was received frozen and not usable for Bacteria or BOD analyses.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Laboratory Data Review Checklist

Completed By:

Alyson McPhetres

Title:

Environmental Scientist

Date:

July 2017

CS Report Name:

October Groundwater Monitoring Well Report
Formerly Kobuk Feed & Fuel
2751 Picket Place, Fairbanks, Alaska

Report Date:

July 14, 2017

Consultant Firm:

Alaska Resources and Environmental Services

Laboratory Name:

SGS North America Inc.

Laboratory Report Number:

116788

ADEC File Number:

100.26.137

Hazard Identification Number:

116788

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 subcontracted or transferred

2. Chain of Custody (CoC)

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

   ☑ Yes ☐ No Comments:

   The incorrect sampling date was listed on the COC. It should be 10/25/2016 for all samples.

   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:

   Sample condition was documented as ok for all samples/

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 incorrect collection date was listed on the COC, which was documented by the laboratory.

e. Data quality or usability affected?

Comments:

Data quality and usability is 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:

1168788003 PS MW3-1016 AK101 - Surrogate recovery for 4-bromofluorobenzene (202%) does not meet QC criteria due to matrix interference.
1168788004 PS DUP-1016 AK101 - Surrogate recovery for 4-bromofluorobenzene (201%) does not meet QC criteria due to matrix interference.

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?

Comments:

The case narrative does not discuss the effect on data quality or usability.

5. Samples Results

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

☑ Yes ☐ No Comments:

b. All applicable holding times met?

☑ Yes ☐ No Comments:

c. All soils reported on a dry weight basis?

☐ Yes ☒ No Comments:

The matrix was water for all samples.

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:

Data quality and usability is 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:

N/A

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

☒ Yes ☐ No Comments:

No samples were affected.

v. Data quality or usability affected?

Comments:

Data quality and usability is 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:

The samples were not analyzed for metals/inorganics.

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:

N/A

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

☑ Yes ☐ No Comments:

No samples were affected.

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

Comments:

Data quality and usability is 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:

1168788003 PS MW3-1016 AK101 - Surrogate recovery for 4-bromofluorobenzene (202%) does not meet QC criteria due to matrix interference.
1168788004 PS DUP-1016 AK101 - Surrogate recovery for 4-bromofluorobenzene (201%) does not meet QC criteria due to matrix interference.

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

☑ Yes ☐ No Comments:

The samples are flagged with an "*" in the laboratory report.

iv. Data quality or usability affected?

Comments:

Data quality may be affected, but data usability is 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 shipped in a single cooler.

iii. All results less than LOQ?

☑ Yes ☐ No Comments:

iv. If above LOQ, what samples are affected?

Comments:

N/A

v. Data quality or usability affected?

Comments:

Data quality and usability is not affected.

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:

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

Comments:

The data quality and usability is not affected because the RPDs were less than the specified DQOs.

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

☐ Yes ☑ No ☐ Not Applicable

An equipment blank was not required for this sampling event.

i. All results less than LOQ?

☑ Yes ☐ No Comments:

N/A

ii. If above LOQ, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected?

Comments:

N/A

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

a. Defined and appropriate?

☑ Yes ☐ No Comments:

Appendix D:

Groundwater Sampling Field Data Sheets

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

Ground Water Monitoring Well Data Sheet

Site Name: KOBUK FEED + FUEL	Well/ Sample ID: MW1 / MW1-1016
Location:	Initial Depth to Water (DTW): 12.11
Client:	Total Well Depth (TD): 16.95
Sampler: D. STAHL	Well Diameter: 1¼"
Date: 10/25/14	Purge Method: BLADDER PUMP WELL WIZARD 3020 MP10 CONTROLLER
Sample Method:	Flow Rate: 0.2 L/min

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
1606 ~~1606~~	6.59	0.761	2.10	4.31	52.6	12.12	1.5	
1609	6.69	0.750	1.40	4.21	32.9	12.11	1.7	
1612	6.73	0.743	0.95	4.07	19.5	12.11	1.9	
1615	6.76	0.736	2.63	4.11	9.4	12.11	2.1	
1618	6.81	0.723	2.58	4.05	-1.9	12.11	2.3	
1621	6.83	0.725	2.05	4.05	-6.5	12.11	2.5	
1624	6.86	0.726	1.52	4.04	-9.6	12.12	2.7	
1627	6.86	0.727	1.11	4.16	-19.3	12.11	3.9	
1630	6.86	0.726	1.00	4.25	-25.6	12.11	4.7	
1633	6.86	0.724	0.61	4.19	-33.0	12.11	4.3	
1636	6.87	0.723	0.60	4.23	-40.6	12.11	4.5	
1639	6.88	0.723	0.58	4.22	-42.8	12.11	4.7	

Did Well Dewater?	Start Purge Time:	DTW prior to sample:
Odor: NONE	Stop Purge Time:	Start Sample Time:
Color: CLEAR	Total Purge Volume:	Total Sample Volume:
Water Quality Meter Model: YSI 556 MPS		Serial ID: 15H102751
Water Level Indicator Model: SOLINIST		Serial ID:

Notes: WELL WIZARD 3020 COMPRESSOR + MP10 CONTROLLER

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

Ground Water Monitoring Well Data Sheet

Site Name: KOBUCK FEED & FUEL	Well/ Sample ID: MW 2 / MW2 - 1016
Location:	Initial Depth to Water (DTW): 14.41
Client:	Total Well Depth (TD): 18.18
Sampler: D. STAHL	Well Diameter: 1¼"
Date: 10/25/2016	Purge Method: BLADDER
Sample Method: LOW FLOW	Flow Rate: 0.3 L/min

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
~~1715~~ 1718	6.64	0.906	1.62	4.07	1.0	14.41	1.3	
1718	6.61	0.844	5.1	3.91	-1.1	14.41	1.6	
1721	6.61	0.823	0.46	3.64	-6.5	14.41	1.9	
1724	6.62	0.811	0.36	3.53	-10.0	14.41	2.3	
1727	6.61	0.800	0.35	3.58	-11.7	14.41	2.6	

Did Well Dewater?	Start Purge Time:	DTW prior to sample:
Odor: "Dirty Socks" Mold	Stop Purge Time:	Start Sample Time:
Color: ~~BROWN~~ CLEAR	Total Purge Volume:	Total Sample Volume:
Water Quality Meter Model:	Serial ID:	
Water Level Indicator Model:	Serial ID:	

Notes: WELL CAP & LOCK MISSING

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

Ground Water Monitoring Well Data Sheet

Site Name: KOBUCK FEED + FUEL	Well/ Sample ID: MW3 MW3-1016 + DUP-1016
Location:	Initial Depth to Water (DTW): 13.00
Client:	Total Well Depth (TD): 18.06
Sampler: D. STAHL	Well Diameter: 1¼"
Date: 10/25/16	Purge Method: BLADDER
Sample Method: LOW FLOW	Flow Rate: 0.3 l/min

Time	ph	SC	DO	Temp (°C)	ORP	DTW (feet)	Cumulative Volume	Observations
1758	6.88	0.984	1.60	5.23	-47.4	13.01	0.5	
1801	6.87	0.901	2.15	5.09	-47.2	13.01	0.8	
1804	6.84	0.858	2.64	4.89	-44.6	13.00	1.1	
1807	6.82	0.833	3.27	4.83	-42.3	13.00	1.4	
1810	6.80	0.820	3.29	4.80	-40.3	13.00	1.7	
1813	6.78	0.811	3.46	4.67	-38.1	13.00	2.0	

Did Well Dewater?	Start Purge Time:	DTW prior to sample:
Odor: FUEL + SULFUR	Stop Purge Time:	Start Sample Time:
Color: INITIALLY LIGHT TAN CLOUDY THEN CLEAR	Total Purge Volume:	Total Sample Volume:
Water Quality Meter Model:		Serial ID:
Water Level Indicator Model:		Serial ID:

Notes: SHEEN WAS OBSERVED ON PURGE WATER (LIGHT TO MED)
DUP COLLECTED FROM THIS LOCATION