## SELAWIK FORMER AVEC TANK FARM AND BARGE LANDING SITE SITE CHARACTERIZATION REPORT

Prepared for:



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## TABLE OF CONTENTS

1.0	Intro	luction	1				
2.0	Objec	ctive	2				
3.0	Site I	Description and Background	2				
4.0	Conta	Contaminants of Concern					
5.0	Field	Screening	3				
6.0	Samp	ling	3				
	6.1	Barge Landing Site	4				
	6.2	Former Power Plant and Tank Farm Site	5				
7.0	Confi	irmation and Characterization Sampling	5				
8.0	Samp	ling Results	6				
9.0	Devia	ations from the Work Plan	8				
10.0	Site F	Recommendations and Conclusions	9				
	10.1	Former Power Plant and Tank Site	9				
	10.2	Barge Landing Site	10				
	10.3	Conclusions	10				

## LIST OF TABLES

Table 1	7
Table 2	8

## LIST OF APPENDICIES

- Appendix A Maps
- Appendix B Photo Log
- Appendix C SGS Laboratory Report
- Appendix D Professional Qualifications

Appendix E – Field Notes

## Acronyms and Abbreviations

ADEC	Alaska Department of Environmental Conservation
AVEC	Alaska Village Electrical Cooperative
AST	Above-ground Storage Tank
bgs	Below ground surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
COPC	Contaminants of Potential Concern
DRO	Diesel Range Organics
GRO	Gasoline Range Organics
Mg/L	Milligrams per Liter
РАН	Polycyclic Aromatic Hydrocarbons
PID	Photo-Ionization Detector
ppm	Parts per Million
QA/QC	Quality Assurance/Quality Control
RAFS	Rural Alaska Fuel Services
RRO	Residual Range Organics
SOP	Standard Operating Procedure
TCLP	Toxicity Characteristic Leaching Procedure
TPECI	Travis/Peterson Environmental Consulting, Inc.
μg/L	Micrograms per Liter
µg/mL	Micrograms per Milliliter

VOC Volatile Organic Compound

## **1.0 INTRODUCTION**

In 2010, the Alaska Department of Environmental Conservation (ADEC) contracted Shannon and Wilson to perform a Brownfields Assessment of several sites in Selawik, Alaska. The sites included a former Alaska Village Electrical Cooperative, Inc. (AVEC) tank farm and a barge landing site where several abandoned AVEC fuel tanks were stored.

The Brownfields Assessment found lead and hydrocarbon contamination around the former AVEC tank farm and noted several potential public health and safety concerns at the site related to fuel spills or leaks, abandoned equipment, and derelict buildings. Soil samples collected from the site also indicated areas of significant hydrocarbon contamination with the potential to impact surrounding surface waters.

The Brownfields Assessment contains recommendations regarding cleanup prior to any future property use. Recommendations include the removal of the abandoned fuel storage tanks from the site, draining fluids from generator units located in an onsite building and their subsequent removal from the site, demolishing the generator building, and removing all cribbing and support structures for the generator building and tanks. The cleanup of miscellaneous onsite debris including metal and wood scraps was also mentioned.

In December, 2011, AVEC received a Potentially Responsible Party (PRP) letter from the ADEC regarding the former AVEC fuel tank farm and barge site in Selawik. In April, 2012, AVEC personnel and local laborers began site cleanup operations. The objective of the 2012 cleanup was to demolish all the structures on the former tank farm and barge landing sites and remove all debris. AAVEC personnel deposited all non-hazardous solid waste from the demolition and cleanup in the Selawik landfill. Used oils were recycled in a used-oil burner.

Five pad-mounted transformers that are noted in the Brownfields Assessment report were also drained and removed. The transformer oil was recycled in a used-oil burner and the housing units were discarded in the landfill. The 2011 Brownfields Assessment report referenced Mark Teitzel, AVEC Vice President and Manager, in stating that the transformer units in Selawik did not contain Polychlorinated biphenyls (PCBs) because the transformers were manufactured after 1979.

Around the year 2000, AVEC decommissioned several tanks and relocated them to the barge landing. These tanks were also mentioned in the 2011 Brownfields Assessment report under the Barge Landing section. During the cleanup process, AVEC cut and disassembled these tanks and then disposed them in the landfill. AVEC no longer has any tanks at the barge landing site.

As the 2010 ADEC assessment of this site occurred during a time when the ground surface was partially frozen, a true characterization of the extent of hydrocarbon contamination was not possible. The assessment report recommended that a complete characterization of the site and contaminated soils be excavated and treated in accordance with applicable standards.

## 2.0 **OBJECTIVE**

AVEC contracted Travis/Peterson Environmental Consulting, Inc. (TPECI) to prepare a site characterization work plan for the Selawik Tank Farm and Barge Landing. ADEC approved it on June 28, 2013. The objective of the plan was to delineate soil contaminant plumes, assist in estimating the volume of contaminated soil, and lay the basis for a site remediation plan.

## 3.0 SITE DESCRIPTION AND BACKGROUND

The project site is located in the village of Selawik on the Selawik River in the Northwest Arctic Borough (Figure 1, Appendix A). The 2012 work demolished all structures on the former AVEC tank farm site. Additionally, all debris and other materials were removed from the site. Currently, the old tank farm site was cleared and ready for characterization (Figure 2, Appendix A).

The decommissioned AVEC fuel tanks stored at the barge landing site were also demolished and removed during the summer of 2012 (Figure 2, Appendix A). No AVEC materials remain at the barge landing site and it was cleared for soil characterization activities.

The terrain surrounding both the former tank farm site and the barge landing site are relatively flat. Sparse vegetation including tundra grasses, willows, and alders is present at both locations. Much of the surrounding ground surfaces consist of gravels or other disturbed soil roadways or trails. General drainage at both sites is towards the Selawik River. The barge landing site is located directly adjacent the Selawik River. There are also two backwater oxbow ponds located adjacent to the barge landing site.

The area around Selawik, including both the former AVEC Power Plant and Tank Farm and the Barge Landing sites is comprised of continuous permafrost. The 2010 Brownsfield investigation report noted on multiple occasions the presence of continuous permafrost in Selawik and the impacts on previous construction and remediation projects in the area. The Brownsfield report also noted that the continuous permafrost and lack of groundwater result in the site falling under the Arctic Zone category under Method Two of the ADEC cleanup standards.

## 4.0 CONTAMINANTS OF CONCERN

The primary contaminant of concern (COC) was number one diesel fuel. TPECI personnel collected soil samples for diesel range organics (DRO), residual range organics (RRO), gasoline range organics (GRO), and benzene, toluene, ethyl benzene, and xylenes (collectively referred to as BTEX). Ten percent of samples were also be analyzed for Polycyclic Aromatic Hydrocarbons (PAH).

Lead contamination on site was also a concern. TPECI instructed the laboratory to analyze 25% of the suspected "worse case" soil samples for lead Toxicity Characteristic Leaching Procedure (TCLP). One of these TCLP soil samples was collected from the 2010 Brownfields Assessment boring area which contained total lead at 572 mg/kg (See Figure 3, Appendix A for boring locations).

TPECI submitted samples to SGS Environmental Laboratories, Inc. in Anchorage, Alaska for analysis. The qualified sampler also performed field screening using a photo-ionization detector (PID) to screen for volatile organic compounds (VOC).

## 5.0 FIELD SCREENING

TPECI personnel field screened soils with the PID, in accordance with the ADEC *May 2010 Draft Field Sampling Guidance*, Section III Soil Sampling. TPECI used a PID threshold of 20 ppm as an indicator of hydrocarbon contamination in soils potentially exceeding ADEC cleanup levels. TPECI personnel took confirmation samples from the highest PID readings within the borehole area. The confirmation samples were collected in accordance with page 19 of the ADEC *May 2010 Draft Field Sampling Guidance*, Section III, Subsection C. Soil Laboratory Analytical Sample Collection, paragraph 5 In-Situ (sub-surface) Soils (see excerpt below).

5. In-Situ (sub-surface) Soils The frequency and location of field screening and laboratory analytical samples must be proposed in the work plan submitted to ADEC for approval.

Typically, two laboratory samples should be collected from each boring. Collect one sample from the interval that is most impacted based on field screening and observations. If applicable, collect a second laboratory sample from the saturated soils just above the water table where contaminants are most likely to migrate, unless sampling objectives dictate otherwise.

The following describes the sampling protocols that TPECI field personnel followed to screen and collect soil samples. Field screening occurred first to delineate hydrocarbon contamination within test borings. A MiniRAE<sup>TM</sup> Systems 2000 PID was utilized for field screening.

The PID was calibrated according to the manufacturer specifications in the field using a fresh air charcoal blank and a 100-ppm isobutylene calibration span gas. Plastic bags were filled three quarters full of soil from the screening sample. The soil, sealed in a plastic bag, was allowed to warm up to between 50 and 70 degrees Fahrenheit. The tip of the calibrated PID was then placed inside the bag for thirty seconds or until the reading stabilizes. PID field screening samples exhibiting headspace screening results greater-than 20 ppm were considered potentially contaminated.

One sample was screened from each test boring. Because there were no excavation pits, no sidewall samples were collected. Permafrost was encountered between 1.5 and two feet below ground surface (bgs) depending on location. Meltwater was encountered at approximately 1.5 feet bgs. All samples were collected between meltwater depth and permafrost (a roughly 0.5 foot interval) as this was the area most likely to contain high contaminant concentrations.

## 6.0 SAMPLING

TPECI personnel conducted this site characterization in accordance with the ADEC 18 AAC 75 Oil and Other Hazardous Substances Pollution Control (revised Oct. 2008) regulations and procedures described in the ADEC Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites (September 2009).

TPECI personnel conducted the site characterization during the summer of 2013. While on site, TPECI personnel were aided by AVEC staff. AVEC staff was familiar with the site history, previous layout, and operations. This knowledge included the locations of the former AVEC tanks, fuel storage areas, and transformer storage areas as well as the barge landing site decommissioned tank storage locations.

TPECI utilized a PID and olfactory and visual clues to determine the extents of the contamination. Hand-carried power augers along with hand tools were used to advance soil borings. TPECI excavated soil test borings in areas of known contamination and areas where visual indicators of contamination were present. This included the five locations of detected surface contaminated soil was encountered, additional test borings were advanced to determine its horizontal extent. The depth of the borings was based on the vertical extent of contamination and the depth to permafrost. All borings were brought to refusal at permafrost depth (approximately 1.5 - two feet bgs) at the power plant and tank farm and at three feet bgs at the barge landing). A total of 14 soil borings were completed at the former power plant and tank farm site (Figure 3, Appendix A). An additional seven borings were advanced at the barge landing site. The Photo Log in Appendix B shows detailed views of soil boring locations as well as other current images of the Former Power Plant and Tank Farm site.

The characterization process included the following:

- Worked with AVEC personnel identifying areas of known contamination;
- Worked with AVEC personnel identifying former locations of structures, fuel tanks, and fuel pipelines;
- Excavated test borings using augers or hand tools at locations of known contaminants;
- Excavated test borings using augers or hand tools at former locations of structures, fuel tanks, confirmed surface contamination (as noted in 2010 Brownfields) and along former pipeline routes;
- Screened and collected soil sample as prescribed in the approved plan except as noted in Section 9.0 Deviations from Work Plan (Sections 5.0 and 7.0); and
- Work outward from test borings with identified contamination (confirmed by PID screening) advancing additional borings until the horizontal extents of contamination were confirmed.

Soil excavated from the test borings was temporarily stockpiled on visqueen. Following the screening and sampling of each test boring, the soil was backfilled.

## 6.1 Barge Landing Site

TPECI personnel screened soil contaminants at the Barge Landing Site. AVEC staff familiar with the site aided TPECI personnel in determining the location of the former fuel tanks and areas of possible contamination. Soil borings and screening were advanced in these locations as well as at the marine header. Soil screening and confirmation sampling was conducted in accordance with all procedures as previously described in this Site Characterization Report.

Only the 12 tanks shown on the aerial image of the barge landing on the eastern edge of the landing site were associated with AVEC. Those tanks had been previously demolished and the scrap material associated with them has been shipped out. Large indentations and stunted vegetation were still visible in the former tank locations.

The abandoned tanks located on the west side of the barge landing were not, and have never been, owned by AVEC. Those tanks are under the ownership of other entities including the Northwest Arctic School District and the City of Selawik. Additionally, the CONEX storage containers and other debris and materials at the barge landing site are also owned by the school district and the City of Selawik.

Samples were collected at the barge landing location at the site of the former AVEC tanks as well as below the marine header. No samples were collected in the area surrounding non-AVEC owned tanks nor around the CONEX containers. A total of six soil borings were completed at the barge landing area. Figure 4 in Appendix A identifies barge landing materials as shows soil boring locations. The Photo Log in Appendix B shows detailed images of the areas sampled at the Barge Landing Site.

## 6.2 Former Power Plant and Tank Farm Site

TPECI personnel advanced a total of 14 borings at the Former Power Plant and Tank Farm site. The locations selected for these soil borings were selected based on the locations of the 2010 Brownsfield Study sample collection locations, knowledge of the AVEC staff familiar with the site, visual and olfactory indicators of contamination on the site. Once initial boring locations such as those located at or near the 2010 Brownsfield study points and other known or readably visible contaminated soils were identified, additional borings were conducted moving outward from the contamination in an attempt to the determine the horizontal extent.

Visual and olfactory indicators of hydrocarbon contamination along with site topography of the presence of surface meltwater indicated that the most impacted areas of the site were in the immediate vicinity of the 2010 Brownsfield Study points. Therefore, primary screening and characterization sampling emphasis was placed on accurately characterizing the site based on these locations.

All soil borings at the Former Power Plant and Tank Farm Site were advanced to a depth of 1.5 to 2.0 feet below ground surface. All borings were bought to refusal at permafrost depth. Meltwater depth was encountered in all borings at a depth of approximately 1.5 feet bgs. Soil was collected for screening from each of the 14 soil borings. Characterization samples for laboratory analysis were not collected from each boring as was stated in in the work plan due to lack of sample collection jars and lack of contaminants present in some areas. (See Section 9.0 Deviations from the Work Plan).

## 7.0 CHARACTERIZATION SAMPLING

Soil was collected as described below from the locations flagged for field screening. The field screening samples which exhibited the highest readings on the PID were chosen for additional

laboratory analysis. Other indicators such as visual soil staining or strong hydrocarbon sheen were also used in the decision to collect a characterization sample for laboratory analysis from a specific soil boring. Soils samples collected for laboratory analysis were collected separately from those collected for field screening. Additionally, field duplicate samples were collected.

All characterization soil samples were analyzed for GRO compounds by method AK101, BTEX by method 8021, and DRO and RRO by method AK102. TCLP Method SW8020 was also analyzed for several characterization samples. One sample for every 10 laboratory samples was also analyzed for PAH by Method 8270 to comply with ADEC's requirement of 10%+ sampling of PAH for Diesel #2 contamination (ADEC *May 2010 Draft Field Sampling Guidance* Appendix D).

#### Sample Field Preparation

Sampling was performed in accordance with the applicable regulations:

- All samples were collected using disposable or cleaned and decontaminated sampling equipment;
- TPECI Environmental Field Staff wore disposable gloves, safety goggles, steel toed boots, hard hat, reflective vest, and other appropriate Class D personal protective equipment. Gloves and sampling devices were changed between samples;
- Samples were collected as quickly as possible and placed in laboratory supplied containers;
- All samples were labeled; and
- All samples were preserved in accordance with laboratory specifications and cooled to a temperature of 4 +/- 2 degrees Celsius.

## 8.0 SAMPLING RESULTS

Soil borings at the Former Power Plant and Tank Farm site were found to have very strong hydrocarbon odors in addition to visible hydrocarbon sheen on the meltwater inside the borings.

Soil borings at the Former Power Plant and Tank Farm site that had a hydrocarbon odor and/or visible hydrocarbon sheen on the meltwater within the boring included P01, P02, P03, P04, P05, P06, and P07. No other borings contained any visual or olfactory indicators of hydrocarbon contamination. A general hydrocarbon odor was noted in the footprint of the Former Power Plant building (P01, P02, P03 area).

TPECI found those locations identified in the 2010 Brownsfield investigation to be among the areas with the highest PID field screening results. In attempts to delineate the horizontal extent of the contamination at the site, TPECI noted that contamination concentrations rapidly decreased with from the former tank site. It was noted that the highest contaminant concentrations were located in and adjacent to the low point on the property. Table 1 shows the SGS laboratory analyticals for the samples collected from the borings at the Former Power Plant and Tank Farm site. Complete analytical results, including PAH analysis results are shown in the SGS Laboratory Report in Appendix C. PAHs 2-methylnapthalene and napthalene exceeded ADEC cleanup levels for the inhalation pathway in the Arctic Zone at some with soil

concentrations up to 395 mg/kg and 164 mg/kg respectively. The site is outdoors and no structures are present on the site. Due to permafrost, any future structures will be elevated. As such the inhalation pathway is incomplete.

			Damasat	PID	RRO	DRO	GRO	Benzene	Toluene	Ethylbenzene	Xylenes	TCLP Lead
Sample ID	Date	Depth (ft)	Colida	Reading	mg/Kg	mg/Kg	mg/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	mg/L
			Solias	PPM	13,700	12,500	1,400	200,000	11,000,000	13,700,000	27,400,000	5.0
P01	7/30/2013	2.0	47.8	687	6,040	83,100	322	102J	887	1,030	27,600	0.0303J
P02	7/30/2013	2.0	29.9	106.7	10,500	1,880	109	67.4U	3,780	132U	453	-
P03	7/30/2013	2.0	46.0	959.6	6,670	57,900	339	370	1,050	2,750	33,600	0.0310U
P04	7/30/2013	2.0	-	317.2	-	-	-	-	-	-	-	-
P05	7/30/2013	2.0	37.4	196.1	10,600	5,930	45.9	54.4U	2080	93.6J	3,300	-
P06	7/30/2013	2.0	-	103.3	-	-	-	-	-	-	-	-
P07	7/30/2013	2.0	-	76.1	-	-	-	-	-	-	-	-
P08	7/30/2013	2.0	-	2.2	-	-	-	-	-	-	-	-
P09	7/30/2013	2.0	-	2.7	-	-	-	-	-	-	-	-
P10	7/30/2013	2.0	33.5	1.2	9,960	2,100	5.61	57.0U	110J	111U	325U	-
P11	7/30/2013	2.0	-	2.1	-	-	-	-	-	-	-	-
P12	7/30/2013	1.5	76.9	1.7	298	31.9	1.50J	10.8U	234	21.0U	61.4U	-
P13	7/30/2013	2.0	-	51.5	-	-	-	-	-	-	-	-
P14	7/30/2013	2.0	-	0.1	-	-	-	-	-	-	-	-
P15	7/30/2013	2.0	34.9	687	11,400	152,000	534	64.9J	586	1,440	22,800	0.0310U
Notes: Bold indicates co	oncentration	exceed ADFC	Cleanup	evel.								
J The quantitatio	on is an estim	ate.										

Table 1. Former Power Plant and Tank Farm Site Laboratory Results.

J The quantitation is an estimate. U Indicates the analyte was analyzed for but not detected.

Contaminant concentrations at the Former Power Plant and Tank Farm site exceeded ADEC cleanup levels for the Arctic Zone Method Two Inhalation Concentrations for DRO and PAH.

Soil borings made at the Barge Landing site did not encounter any visible hydrocarbon stained or vegetation stressed due to chemical presence. Nor were any hydrocarbon odors observed while sampling. PID field screening at the site did not indicate any hydrocarbon contamination at either the form tank staging location or at the marine header site. All PID readings at the barge landing site were found to be below the 20ppm threshold that would indicate contaminant concentrations potentially exceeding ADEC cleanup levels.

Soil characterization samples collected at P01 and P03 were also analyzed for TCLP Lead. The 2010 Brownsfield Assessment indicated high levels of lead in the one study boring. The approved work plan stated that characterizations samples would be analyzed for TCLP lead in the area of the 2010 Brownsfield Assessment boring. Unfortunately, a miscommunication between ADEC and TPECI personnel regarding the specific location of this sampling site resulted in TPECI personnel not collecting a sample in the exact spot as the 2010 sampling location (roughly at P02, ASV5 in the Brownsfield report). Instead, samples at both P01 and P03 were analyzed for TCLP lead. Both sample locations are in the immediate vicinity of P02 and are within 10 horizontal feet of P02. Those two sample locations were selected as they contained the greatest hydrocarbon contamination based on field screenings.

Laboratory results for both P01 and P03 were found to be either non-detect or a laboratory estimate of 0.03 mg/L, significantly below the EPA RCRA limit for lead of 5.0 mg/L.

Sample P15 is a field duplicate of sample P01. While the boring at P01 did not have the highest PID reading of all field screenings, there was significant soil staining and a strong hydrocarbon odor around the boring and a visible sheen present on the meltwater within the boring.

Table 2 shows the SGS laboratory analyticals for the samples collected from the borings at the Barge Landing Site. Complete analytical results, including PAH analysis results are shown in the SGS Laboratory Report in Appendix C.

				PID	RRO	DRO	GRO	Benzene	Toluene	Ethylbenzene	Xylenes	TCLP Lead
Sample ID	Date	Depth (ft)	Percent	Reading	mg/Kg	mg/Kg	mg/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	mg/L
			Solids	PPM	13,700	12,500	1,400	200,000	11,000,000	13,700,000	27,400,000	5.0
BL01-1	7/30/2013	1.0	-	1.2	-	-	-	-	-	-	-	-
BL02-1	7/30/2013	1.0	-	0.4	-	-	-	-	-	-	-	-
BL03-1	7/30/2013	1.0	-	0.0	-	-	-	-	-	-	-	-
BL04-1	7/30/2013	1.0	-	0.0	-	-	-	-	-	-	-	-
BL05-1	7/30/2013	1.0	-	0.4	-	-	-	-	-	-	-	-
MH01-1	7/30/2013	1.0	69.9	0.9	124	24.7	1.76J	17.1U	31.5J	33.2U	97.2U	0.0310U
BL01-3	7/30/2013	3.0	-	0.8	-	-	-	-	-	-	-	-
BL02-3	7/30/2013	3.0	65.4	0.6	381	51.4	1.91J	19.8U	21.0J	38.6U	112.8U	0.0310U
BL03-3	7/30/2013	3.0	-	0.1	-	-	-	-	-	-	-	-
BL04-3	7/30/2013	3.0	-	0.0	-	-	-	-	-	-	-	-
BL05-3	7/30/2013	3.0	64.8	0.3	413	52.9	2.52J	18.6U	241	36.2U	70.9U	-
MH01-3	7/30/2013	3.0	-	1.7	-	-	-	-	-	-	-	-
lotes:												
old indicates o	oncentration	exceed ADEC	Cleanup L	evel.								
The quantitati	on is an estim	ate.										
J Indicates the	analyte was ar	nalyzed for bi	ut not dete	cted.								

Table 2. Barge Landing Site Laboratory Results.

No contaminant concentrations for any analytes at the Barge Landing site, for both the former tank staging area and the marine header location, were found to be above ADEC cleanup levels. Both field screening and laboratory analytical results indicated that hydrocarbon contamination was not present in those areas occupied or formerly occupied by AVEC equipment.

## 9.0 DEVIATIONS FROM THE WORK PLAN

Section 6.0 "Field Screening" of the approved work plan stated that "At least one sample will be screened for every vertical foot of depth excavated from each test boring." At the Former Power Plant and Tank Farm site permafrost was encountered at a depth of 1.5 to 2.0 feet bgs and meltwater was encountered at a depth of 1.5 feet bgs. Thus the sampling column was limited. Additionally, highly organic soils and saturated soils limited availability of soils within each boring for sampling (Note percent solids in SGS Laboratory report for each sample). As a result, only a single screening sample was collected in each boring at the Former Power Plant and Tank Farm site. The screening sample at each boring was collected at the meltwater interface depth, the point most likely to show evidence of hydrocarbon contamination.

Two screening samples, one at 1.0 feet bgs and one at 3.0 feet bgs were collected at the barge landing site due to increased depth to permafrost.

Section 7.0 "Confirmation and Characterization Sampling" of the approved work plan stated that "Two laboratory samples will be collected from each boring. One sample will be collected from the interval that is most impacted based on headspace PID screening...and observations. If

possible, a second laboratory sample will be collected from saturated soils just above the water table (if encountered) where contaminants are most likely to migrate."

At the Former Power Plant and Tank Farm site permafrost was encountered at a depth of 1.5 to 2.0 feet bgs and meltwater was encountered at a depth of 1.5 feet bgs. Thus the sampling column was limited. Additionally, highly organic soils and saturated soils limited availability of soils within each boring for sampling (Note percent solids in SGS Laboratory report for each sample). The collection of two samples from each boring was neither feasible nor practicable. As a result, only a single characterization sample for laboratory analysis was collected in any one boring. The sample in the boring was collected at the meltwater interface depth, the point most likely to show evidence of hydrocarbon contamination.

The work plan stated that characterization samples for laboratory analysis were to be collected at each soil boring. However, an increased number of soil borings than originally anticipated as well as damage to a number of sample collection jars during travel resulted in a limited number of jars. Not enough sample collection jars were available to allow for a characterization sample to be collected from each soil boring.

Even if an appropriate number of sample collection jars allowed, field screening and visual and olfactory indicators found that it would not have been necessary or practicable for a characterization sample to be collected at each soil boring. Many locations, particularly those at the Barge Landing site, as well as several at the Former Power Plant and Tank Farm site showed no indications of hydrocarbon contamination. The collection of a characterization sample at these borings would have resulted in an unnecessary expense to AVEC.

## **10.0 SITE RECOMMENDATIONS AND CONCLUSIONS**

## **10.1** Former Power Plant and Tank Farm Site

TPECI site investigation and characterization found that hydrocarbon contamination was present at the Former Power Plant and Tank Farm site. Contaminant concentrations in some locations exceeded Table B2 (Method Two) Inhalation Arctic Zone ADEC cleanup levels. Contaminated soils on the property must be addressed before the site can be closed.

In addition to the contaminated soils located on the property, TPECI personnel noted during the investigation that significant quantities of debris and remnants of the former power plant and tank farm remain on the property. Demolition of the facilities on the property had occurred during the winter months. Much of the cribbing and sub-grade piping and structures remained frozen in the ground at the time. That debris remains on the property. The liner for the tank farm, though shredded and in many pieces, also remains partially buried on site. In addition to remaining site debris, local residents have begun dumping trash, derelict vehicle components and other refuse on the property. Significant site cleanup will be necessary prior to any excavation of contaminated soils could occur.

Prior to any additional site cleanup at the Former Power Plant and Tank Farm location, either removal of debris or excavation of contaminated soils and site remediation, a Corrective Action Plan (CAP) will have to be prepared for the site and the proposed CAP approved by the ADEC.

The CAP will address methods for soil excavation, confirmation sampling and the fate and treatment of any excavated soils.

#### **10.2 Barge Landing Site**

TPECI site investigation and characterization of the Barge Landing Site found that the location where AVEC had stored their abandoned tanks prior to demolition did contain any hydrocarbon soil contamination. No indications of surface contamination were noted and the laboratory analysis of soil samples collected at the site found hydrocarbon concentrations consistent with typical background ranges found in Alaskan villages and significantly below ADEC cleanup limits. The samples collected at the marine header location confirmed similar findings.

The only locations at the Barge Landing site that AVEC has had any historic involvement are the staging area for the abandoned tanks and the marine header. These locations are downgradient of all other materials and tanks owned by other entities at the barge landing. No other materials or tanks at the site belong to, or are associated with AVEC.

Based on the findings of this site characterization of the AVEC properties at the Barge Landing site, AVEC operations have not resulted in any contamination found at the site. AVEC is not liable for any potential contamination at the Barge Landing associated with other entities as was noted in the 2010 Brownsfield Assessment. AVEC will not conduct any corrective action at the Barge Landing site nor will the site be addressed in a CAP for the cleanup of contaminated sites in Selawik.

#### 10.3 Conclusions

During the winter of 2013-2014, AVEC will prepare a CAP for the cleanup of the Former Power Plant and Tank Farm site. This CAP will be submitted to ADEC for approval with the goal of completing site remediation during the summer of 2014.

APPENDIX A: Figures









APPENDIX B: Photo Log



#### Selawik AVEC Tank Farm and Barge Landing Site Characterization: Photo Log – July 30, 2013







































APPENDIX C: SGS Laboratory Report

# Laboratory Data Review Checklist

Comp	bleted by:	Erik Mundahl										
Title:		Environmental	Engineer, EIT	Date:	11/5/2013							
CS Re	eport Name:	AVEC Selawil	Χ		Report Date:							
Consu	ultant Firm:	Travis/Peterso	n Environmental	Consulting								
Labor	atory Name:	SGS Laborator	ries	Laboratory Report	Number: 1133443							
ADEC	C File Number:	500.38.007, 50	0.57.001	ADEC RecKey Nu	ımber:							
1. <u>L</u>	<u>aboratory</u> a. Did an A	ADEC CS appro	oved laboratory r	eceive and perform al	l of the submitted	sample analyses?						
	• Yes	$\bigcirc$ No	○ NA (Plea	use explain.)	Comments:	1 2						
	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	$\bigcirc$ No	• NA (Pleas	e explain)	Comments:							
	None transferre	d										
2. <u>Cl</u>	hain of Custody	<u>(COC)</u>										
	a. COC infor	mation complet	ed, signed, and d	ated (including releas	ed/received by)?							
I	• Yes	⊖ No	○NA (Pleas	e explain)	Comments:							
	b. Correct an	alyses requeste	d?									
ſ	• Yes	⊖ No	○NA (Plea	ase explain)	Comments:							
3. <u>La</u>	aboratory Sampl	e Receipt Docu	mentation									
	a. Sample/co	oler temperatur	e documented an	d within range at rece	ipt $(4^{\circ} \pm 2^{\circ} C)$ ?							
	• Yes	⊖ No	⊖NA (Ple	ase explain)	Comments:							
[												

b. Sample preservation accepta	ble - acidified waters	, Methanol preserved	VOC soil (GRO	, BTEX,
Volatile Chlorinated Solven	ts, etc.)?			

• Yes	● Yes ○ No ○ NA (Please exp		Comments:
c. Sample co	ondition docume	nted - broken, leaking (Methanol)	, zero headspace (VOC vials)?
● Yes       ○ No       ○ NA (Please explain)       Comments:         c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?       ● Yes       ○ No       ○ NA (Please explain)       Comments:         One Sample jar lid broken, replaced.       .       .       .       .         d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?       ○ Yes       ● No       ○NA (Please explain)       Comments:         No discrepancies       .       .       .       .       .         e. Data quality or usability affected? (Please explain)       .       Comments:         Data quality and usability not affected.       .       .         ase Narrative       .       .       .         a. Present and understandable?       .       .       .         • Yes       No       ONA (Please explain)       Comments:         b. Discrepancies, errors or QC failures identified by the lab?       .       .       .         • Yes       No       .       .       .       .         c. Were all corrective actions documented?       .       .       .       .         or Yes       No       .       .			
One Sample jar	lid broken, repl	aced.	
d. If there we preservation	ere any discrepa , sample tempera	ncies, were they documented? - Feature outside of acceptance range,	or example, incorrect sample containers/ insufficient or missing samples, etc.?
⊖ Yes	• No	ONA (Please explain)	Comments:
No discrepancie	S		
e. Data quali	ty or usability at	ffected? (Please explain)	
			Comments:
Data quality and	d usability not at	ffected.	
Case Narrative			
a. Present an	d understandable	e?	
• Yes	$\bigcirc$ No	○NA (Please explain)	Comments:
b. Discrepan	cies, errors or Q	C failures identified by the lab?	
• Yes	$\bigcirc$ No	○NA (Please explain)	Comments:
c. Were all c	orrective actions	s documented?	
• Yes	$\bigcirc$ No	○NA (Please explain)	Comments:

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

Comments:

No effect on data quality and usability. Surrogate dilutions all biased high. Some high bias samples remained below ADEC cleanup levels.

4.

## 5. Samples Results

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

• Yes	⊖ No	○NA (Please explain)	Comments:
b. All applical	ole holding tim	es met?	
⊖ Yes	⊖ No	○NA (Please explain)	Comments:
c. All soils rep	ported on a dry	weight basis?	
• Yes	○ No	○NA (Please explain)	Comments:
d. Are the report	orted PQLs les	s than the Cleanup Level or the min	imum required detection level for the
• Yes	⊖ No	○NA (Please explain)	Comments:
Data quality and <u>C Samples</u> a. Method Blar	usability not a	ffected.	
i. One me	ethod blank rep	ported per matrix, analysis and 20 sa	imples?
• Ye	s O No	○ NA (Please explain)	Comments:
ii. All met • Ye	hod blank resu es O No	lts less than PQL? ONA (Please explain)	Comments:
iii. If abov	e PQL, what s	amples are affected?	Comments:

6.

iv.	Do the	affected	sample(s)	have data f	lags? If so,	are the dat	ta flags clea	rly defined?
					0 /		0	2

$\bigcirc$ Yes $\bigcirc$ No $\bigcirc$ NA (Please explain) Comments:	
---	--

v. Data quality or usability affected? (Please explain)	Comments:	
Data quality and usability 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	$\bigcirc$ No	○NA (Please explain)	Comments:
-------	---------------	----------------------	-----------

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

• Yes	$\bigcirc$ No	○NA (Please explain)	Comments:
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iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

• Yes	⊖ No	○NA (Please explain)	Comments:	

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/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

• Yes	⊖ No	○NA (Please explain)	Comments:	

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

	Comments:
NA	

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

U res	⊖ No	• NA (Please explain)	Comments:
No affected san	nples.		
vii. Data o	quality or usab	vility affected? (Please explain)	Comments:
Data usability a	and quality not	affected.	
c. Surrogates	- Organics On	ıly	
i. Are surr	ogate recoveri	es reported for organic analyses - fie	ld, QC and laboratory samples?
• Yes	⊖ No	CNA (Please explain)	Comments:
ii Accura	ov All percei	nt recoveries (%P) reported and with	in method or laboratory limits? And
project sp the labora	ecified DQOs, tory report pag	, if applicable. (AK Petroleum metho ges)	ods 50-150 %R; all other analyses see
• Yes	$\bigcirc$ No	○NA (Please explain)	Comments:
		a with failed sume sate measuration ha	ve data flags? If so, are the data flags
iii. Do the clearly de • Yes	e sample result fined? ○ No	s with failed surrogate recoveries has	ve data flags? If so, are the data flags Comments:
iii. Do the clearly de Yes iv. Data q	e sample result fined? O No uality or usabi	NA (Please explain)	ve data flags? If so, are the data flags Comments:
iii. Do the clearly de Yes iv. Data q Data quality and	e sample result fined? O No uality or usabi	NA (Please explain)	ve data flags? If so, are the data flags Comments: to explain.). Comments:
iii. Do the clearly de Yes iv. Data q Data quality and d. Trip Blank <u>Soil</u> i. One trip (If not, en	e sample result fined?	Solution with failed surrogate recoveries has ONA (Please explain) A lity affected? (Use the comment box affected. I lyses only (GRO, BTEX, Volatile Cl ed per matrix, analysis and for each c n below.)	ve data flags? If so, are the data flags Comments: a to explain.). Comments: hlorinated Solvents, etc.): <u>Water and</u> ooler containing volatile samples?
<ul> <li>iii. Do the clearly de</li> <li>• Yes</li> <li>iv. Data quality and</li> <li>d. Trip Blank Soil <ol> <li>One trip (If not, en</li> <li>Yes</li> </ol> </li> </ul>	e sample result fined? No uality or usabi uality or usabi usability not - Volatile ana blank reportenter explanation No	<ul> <li>S with failed surrogate recoveries has</li> <li>ONA (Please explain)</li> <li>Ility affected? (Use the comment box affected.</li> <li>Ilyses only (GRO, BTEX, Volatile Clear of the per matrix, analysis and for each con below.)</li> <li>ONA (Please explain.)</li> </ul>	ve data flags? If so, are the data flags Comments: a to explain.). Comments: hlorinated Solvents, etc.): <u>Water and</u> ooler containing volatile samples? Comments:
<ul> <li>iii. Do the clearly de</li> <li>Iv. Data quality and</li> <li>d. Trip Blank Soil <ol> <li>One trip (If not, en</li> <li>Yes</li> </ol> </li> <li>ii. Is the c (If not, quality not, quality content)</li> </ul>	e sample result fined?	Solutions of the trip blank and VOA san splaining why must be entered below.	ve data flags? If so, are the data flags Comments: to explain.). Comments: hlorinated Solvents, etc.): <u>Water and</u> ooler containing volatile samples? Comments:

● Yes ○ No ○ NA (Please explain.) Comments:	
iv. If above PQL, what samples are affected?	
Comments:	
v. Data quality or usability affected? (Please explain.)	
Comments:	
Data quality and usability not affected.	
e. Field Duplicate	
1. One field duplicate submitted per matrix, analysis and 10 project samples?	
● Yes ○ No ○ NA (Please explain) Comments:	
ii. Submitted blind to lab?	
● Yes ○ No ○ NA (Please explain.) Comments:	
<ul><li>iii. Precision - All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)</li></ul>	
RPD (%) = Absolute Value of: $(R_1 - R_2) \times 100$	
$((R_{1+}R_2)/2)$	
Where $R_1 =$ Sample Concentration	
$R_2$ = Field Duplicate Concentration	
○ Yes ● No ○ NA (Please explain) Comments:	
Soil relative percent difference on field duplicate at 58%.	

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

Comments:

Comments:

Comments:

⊖ Yes	• No	○NA (Please explain)	
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Data quality and usability not affected. DRO at 83,100mg/kg and duplicate at 152,000mg/kg. At these concentrations so far above cleanup levels remaining within DQO's not as essential. Cleanup action regardless.

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ● NA (Please explain) Comments:

Not applicable

i. All results less than PQL?

● Yes ○ No ○ NA (Please explain) Comments:

ii. If above PQL, what samples are affected?

NA

iii. Data quality or usability affected? (Please explain.)

Data quality and usability not affected.

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

a. Defined and appropriate?

• Yes	$\bigcirc$ No	○NA (Please explain)	Comments:	

**Reset Form** 



#### Laboratory Report of Analysis

To: Travis/Peterson (TPECI) 3305 Arctic Blvd Suite 102 Anchorage, AK 99503 (907)522-4332

Report Number: **1133443** 

Client Project: AVEC Selawik

Dear Erik Mundahl,

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 five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

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

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

Sincerely, SGS North America Inc.

Victoria Pennick Project Manager Victoria.Pennick@sgs.com Date

Print Date: 08/14/2013 9:31:52AM



#### Case Narrative

#### SGS Client: Travis/Peterson (TPECI) SGS Project: 1133443 Project Name/Site: AVEC Selawik Project Contact: Erik Mundahl

Refer to sample receipt form for information on sample condition.

#### P01 (1133443001) PS

AK102 - The pattern is consistent with a weathered middle distillate.

AK103 - Unknown hydrocarbon with several peaks is present.

AK102/103 - 5a-Androstane and n-triacontane (surrogates) recoveries are outside QC criteria due to sample dilution. 8270D SIM - Surrogate (2-fluorobiphenyl and terphenyl-14) recovery is outside of QC criteria due to sample dilution. 8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference. AK101/8021B - Elevated LOQ due to sample Matrix

#### P02 (1133443002) PS

AK102/103 - Unknown hydrocarbon with several peaks is present.

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased low). Sample was analyzed twice and results confirmed.

#### P03 (1133443003) PS

AK102 - The pattern is consistent with a weathered middle distillate.

AK103 - Unknown hydrocarbon with several peaks is present.

AK102/103 - 5a-Androstane and n-triacontane (surrogates) recoveries are outside QC criteria due to sample dilution.

8270D SIM - Surrogate (2-fluorobiphenyl and terphenyl-14) recovery is outside of QC criteria due to sample dilution. 8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.

#### P05 (1133443004) PS

AK102 - The pattern is consistent with a weathered middle distillate.

AK103 - Unknown hydrocarbon with several peaks is present.

#### P10 (1133443005) PS

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased low). Sample was analyzed twice and results confirmed.

AK102/103 - Unknown hydrocarbon with several peaks is present.

#### P12 (1133443006) PS

AK102/103 - Unknown hydrocarbon with several peaks is present.

#### BL02-3 (1133443007) PS

AK102/103 - Unknown hydrocarbon with several peaks is present.

#### BL05-3 (1133443008) PS

AK102/103 - Unknown hydrocarbon with several peaks is present.

#### MH01-1 (1133443009) PS

AK103 - Unknown hydrocarbon with several peaks is present.

#### P15 (1133443010) PS

Print Date: 08/14/2013 9:31:52AM


#### **Case Narrative**

## SGS Client: Travis/Peterson (TPECI) SGS Project: 1133443 Project Name/Site: AVEC Selawik Project Contact: Erik Mundahl

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

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.

AK101/8021B - Elevated LOQ due to sample Matrix

AK102 - The pattern is consistent with a weathered middle distillate.

AK103 - Unknown hydrocarbon with several peaks is present.

AK102/103 - 5a-Androstane and n-triacontane (surrogates) recoveries are outside QC criteria due to sample dilution.

8270D SIM- Surrogate (2-fluorobiphenyl) recovery is outside of QC criteria due to sample dilution.

8270D SIM- LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

#### 1133440012MS (1164265) MS

8270D SIM - MS/MSD recovery for multiple analytes is outside of QC criteria. Refer to LCS for accuracy.

#### 1133443001MS (1164570) MS

6020 - Metals - MS recovery is outside of acceptance criteria for mercury. Post-digestion spike was successful.

### 1133500004MS (1164760) MS

8270D SIM - Surrogate (terphenyl-14) recovery is outside of QC criteria due to sample dilution.
8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.
8270D SIM - MS/MSD recovery for multiple analytes is outside of QC criteria. Refer to LCS for accuracy.

8270D-SIM – Mo/MSD recovery for multiple analytes is outside of do criteria. Refer to LOS for accuracy. 8270D-SIM – Coeluting peak for benzo(b)fluoranthene and benzo(k)fluoranthene has been quantified as benzo(b)fluoranthene.

### 1133440012MSD (1164266) MSD

8270D SIM - MS/MSD recovery for multiple analytes is outside of QC criteria. Refer to LCS for accuracy.

#### 1133500004MSD (1164761) MSD

8270D SIM - Surrogate (2-flurobiphenyl and terphenyl-14) recovery is outside of QC criteria due to sample dilution. 8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

8270D SIM - MS/MSD recovery for multiple analytes is outside of QC criteria. Refer to LCS for accuracy.

8270D SIM - MS/MSD RPD for indeno[1,2,3-c,d]pyrene, dibenzo[a,h]anthracene and benzo[g,h,i]perylene does not meet QC criteria.

8270D-SIM – Coeluting peak for benzo(b)fluoranthene and benzo(k)fluoranthene has been quantified as benzo(b)fluoranthene.

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

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	Report o	of Manual Integration	IS	
Laboratory ID	Client Sample ID	Analytical Batch	<u>Analyte</u>	<u>Reason</u>
8270D SIMS (PA	Н)			
1133440012	LABREFQC	XMS7490	Benzo(a)Anthracene	RP
1133500004	LABREFQC	XMS7503	Benzo[b]Fluoranthene	IT
1164760	1133500004MS	XMS7503	Benzo[b]Fluoranthene	IT
1164761	1133500004MSD	XMS7503	Benzo[b]Fluoranthene	IT

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: 08/14/2013 9:31:53AM



### 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. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>), unless other written agreements have been accepted by both parties.

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: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 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 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., 2xDL)
- LOQ Limit of Quantitation (i.e., reporting or practical quantitation limit)
- LT Less Than
- M A matrix effect was present.
- MB Method Blank
- MS(D) Matrix Spike (Duplicate)
- ND Indicates the analyte is not detected.
- Q QC parameter out of acceptance range.
- R Rejected
- RPD Relative Percent Difference
- U Indicates the analyte was analyzed for but not detected.
- Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.



Sample Su	mmary
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Client Sample ID	Lab Sample ID	<b>Collected</b>	Received	Matrix
P01	1133443001	07/30/2013	07/31/2013	Soil/Solid (dry weight)
P02	1133443002	07/30/2013	07/31/2013	Soil/Solid (dry weight)
P03	1133443003	07/30/2013	07/31/2013	Soil/Solid (dry weight)
P05	1133443004	07/30/2013	07/31/2013	Soil/Solid (dry weight)
P10	1133443005	07/30/2013	07/31/2013	Soil/Solid (dry weight)
P12	1133443006	07/30/2013	07/31/2013	Soil/Solid (dry weight)
BL02-3	1133443007	07/30/2013	07/31/2013	Soil/Solid (dry weight)
BL05-3	1133443008	07/30/2013	07/31/2013	Soil/Solid (dry weight)
MH01-1	1133443009	07/30/2013	07/31/2013	Soil/Solid (dry weight)
P15	1133443010	07/30/2013	07/31/2013	Soil/Solid (dry weight)
Trip Blank	1133443011	07/30/2013	07/31/2013	Solid/Soil (Wet Weight)

Method
8270D SIMS (PAH)
AK101
SW8021B
AK102
AK103
SW6020 TCLP
SM21 2540G

# Method Description

8270 PAH SIM Semi-Volatiles GC/MS AK101/8021 Combo. (S) AK101/8021 Combo. (S) Diesel/Residual Range Organics Diesel/Residual Range Organics Metals by ICP-MS Percent Solids SM2540G

Print Date: 08/14/2013 9:31:54AM



# **Detectable Results Summary**

Client Sample ID: P01			
Lab Sample ID: 1133443001	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	302000	ug/Kg
-	2-Methylnaphthalene	395000	ug/Kg
	Acenaphthene	6580	ug/Kg
	Fluoranthene	1040J	ug/Kg
	Fluorene	11100	ug/Kg
	Naphthalene	163000	ug/Kg
	Phenanthrene	5160	ug/Kg
	Pyrene	1120J	ug/Kg
Semivolatile Organic Fuels	Diesel Range Organics	83100	mg/Kg
-	Residual Range Organics	6040	mg/Kg
TCLP Constituents Metals	Lead	0.0303J	mg/L
Volatile Fuels	Benzene	102J	ug/Kg
	Ethylbenzene	1030	ug/Kg
	Gasoline Range Organics	322	mg/Kg
	o-Xylene	14900	ug/Kg
	P & M -Xylene	12700	ug/Kg
	Toluene	887	ug/Kg
Client Sample ID: <b>B02</b>			
Lah Sample ID: 1133443002	Decemeter	Booult	Linito
Somivolatile Organia Eucla	<u>Falameter</u> Diesel Range Organics	1880	<u>onits</u> ma/Ka
Sentivolatile Organic Fuels	Residual Pange Organics	10500	mg/Kg
	Casolino Pango Organics	10500	mg/Kg
volatile rueis		240	ug/Kg
		240	ug/Kg
	Toluene	3780	ug/Kg
	Toldene	5766	uging
Client Sample ID: P03			
Lab Sample ID: 1133443003	Parameter	<u>Result</u>	<u>Units</u>
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	177000	ug/Kg
	2-Methylnaphthalene	316000	ug/Kg
	Acenaphthene	5570	ug/Kg
	Fluorene	9730	ug/Kg
	Naphthalene	127000	ug/Kg
	Phenanthrene	5890	ug/Kg
Semivolatile Organic Fuels	Diesel Range Organics	57900	mg/Kg
	Residual Range Organics	6670	mg/Kg
Volatile Fuels	Benzene	370	ug/Kg
	Ethylbenzene	2750	ug/Kg
	Gasoline Range Organics	339	mg/Kg
	o-Xylene	18300	ug/Kg
	P & M -Xylene	15300	ug/Kg
	Toluene	1050	ug/Kg

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# **Detectable Results Summary**

Client Sample ID: P05			
Lab Sample ID: 1133443004	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	5930	mg/Kg
-	Residual Range Organics	10600	mg/Kg
Volatile Fuels	Ethylbenzene	93.6J	ug/Kg
	Gasoline Range Organics	45.9	mg/Kg
	o-Xylene	2070	ug/Kg
	P & M -Xylene	1230	ug/Kg
	Toluene	2080	ug/Kg
Client Sample ID: P10			
Lab Sample ID: 1133443005	Parameter	Result	Linite
Semivolatile Organic Fuels	Diesel Range Organics	2100	ma/Ka
	Residual Range Organics	9960	ma/Ka
Volatile Fuels	Gasoline Range Organics	5 61J	ma/Ka
	Toluene	110J	ua/Ka
			-3-1-3
Client Sample ID: <b>P12</b>			
	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	31.9	mg/Kg
		298	mg/Kg
Volatile Fuels		1.50J	mg/Kg
	loluene	234	ug/Kg
Client Sample ID: BL02-3			
Lab Sample ID: 1133443007	Parameter_	<u>Result</u>	<u>Units</u>
Polynuclear Aromatics GC/MS	2-Methylnaphthalene	2.28J	ug/Kg
	Benzo[g,h,i]perylene	6.47J	ug/Kg
	Fluoranthene	3.89J	ug/Kg
	Naphthalene	2.27J	ug/Kg
	Phenanthrene	3.17J	ug/Kg
	Pyrene	2.41J	ug/Kg
Semivolatile Organic Fuels	Diesel Range Organics	51.4	mg/Kg
	Residual Range Organics	381	mg/Kg
Volatile Fuels	Gasoline Range Organics	1.91J	mg/Kg
	Toluene	21.0J	ug/Kg
Client Sample ID: BL05-3			
Lab Sample ID: 1133443008	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	52.9	mg/Kg
	Residual Range Organics	413	mg/Kg
Volatile Fuels	Gasoline Range Organics	2.52J	mg/Kg
	o-Xylene	24.4J	ug/Kg
	o-Xylene P & M -Xylene	24.4J 46.5J	ug/Kg ug/Kg
	o-Xylene P & M -Xylene Toluene	24.4J 46.5J 241	ug/Kg ug/Kg ug/Kg

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# **Detectable Results Summary**

Client Sample ID: MH01-1			
Lab Sample ID: 1133443009	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	17.6	ug/Kg
-	2-Methylnaphthalene	22.3	ug/Kg
	Benzo[g,h,i]perylene	4.97J	ug/Kg
	Fluorene	2.65J	ug/Kg
	Naphthalene	7.83	ug/Kg
	Phenanthrene	3.03J	ug/Kg
Semivolatile Organic Fuels	Diesel Range Organics	24.7J	mg/Kg
-	Residual Range Organics	124	mg/Kg
Volatile Fuels	Gasoline Range Organics	1.76J	mg/Kg
	Toluene	31.5J	ug/Kg
Client Sample ID: P15			
Lab Sample ID: 1133443010	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	298000	ua/Ka
	2-Methylnaphthalene	344000	ua/Ka
	Acenaphthene	6720	ua/Ka
	Benzo(a)Anthracene	181J	ua/Ka
	Chrysene	235J	ug/Kg
	Fluoranthene	733	ug/Kg
	Fluorene	10900	ug/Kg
	Naphthalene	164000	ug/Kg
	Phenanthrene	4990	ug/Kg
	Pyrene	719	ug/Kg
Semivolatile Organic Fuels	Diesel Range Organics	152000	mg/Kg
-	Residual Range Organics	11400	mg/Kg
Volatile Fuels	Benzene	64.9J	ug/Kg
	Ethylbenzene	1440	ug/Kg
	Gasoline Range Organics	534	mg/Kg
	o-Xylene	12400	ug/Kg
	P & M -Xylene	10400	ug/Kg
	Toluene	586	ug/Kg
Client Sample ID: Trip Blank			
Lab Sample ID: 1133443011	Parameter	Result	Units
Volatile Fuels	Gasoline Range Organics	0.764J	ma/Ka
	······································		

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### Results of P01

Client Sample ID: **P01** Client Project ID: **AVEC Selawik** Lab Sample ID: 1133443001 Lab Project ID: 1133443 Collection Date: 07/30/13 09:18 Received Date: 07/31/13 09:48 Matrix: Soil/Solid (dry weight) Solids (%): 47.8

# Results by Polynuclear Aromatics GC/MS

		<u> </u>	1.0.0/01				
Parameter	Result	Qual	LOQ/CL	DL	Units	DE	Date Analyzed
1-Methylnaphthalene	302000		62200	18600	ug/Kg	400	08/07/13 20:43
2-Methylnaphthalene	395000		62200	18600	ug/Kg	400	08/07/13 20:43
Acenaphthene	6580		3110	932	ug/Kg	20	08/05/13 17:04
Acenaphthylene	1864	U	3110	932	ug/Kg	20	08/05/13 17:04
Anthracene	1864	U	3110	932	ug/Kg	20	08/05/13 17:04
Benzo(a)Anthracene	1864	U	3110	932	ug/Kg	20	08/05/13 17:04
Benzo[a]pyrene	1864	U	3110	932	ug/Kg	20	08/05/13 17:04
Benzo[b]Fluoranthene	1864	U	3110	932	ug/Kg	20	08/05/13 17:04
Benzo[g,h,i]perylene	1864	U	3110	932	ug/Kg	20	08/05/13 17:04
Benzo[k]fluoranthene	1864	U	3110	932	ug/Kg	20	08/05/13 17:04
Chrysene	1864	U	3110	932	ug/Kg	20	08/05/13 17:04
Dibenzo[a,h]anthracene	1864	U	3110	932	ug/Kg	20	08/05/13 17:04
Fluoranthene	1040	J	3110	932	ug/Kg	20	08/05/13 17:04
Fluorene	11100		3110	932	ug/Kg	20	08/05/13 17:04
Indeno[1,2,3-c,d] pyrene	1864	U	3110	932	ug/Kg	20	08/05/13 17:04
Naphthalene	163000		62200	18600	ug/Kg	400	08/07/13 20:43
Phenanthrene	5160		3110	932	ug/Kg	20	08/05/13 17:04
Pyrene	1120	J	3110	932	ug/Kg	20	08/05/13 17:04
Surrogates							
2-Fluorobiphenyl	8610	*	45-105		%	20	08/05/13 17:04
Terphenyl-d14	342	*	30-125		%	20	08/05/13 17:04

### **Batch Information**

Analytical Batch: XMS7494 Analytical Method: 8270D SIMS (PAH) Analyst: RTS Analytical Date/Time: 08/05/13 17:04 Container ID: 1133443001-A

Analytical Batch: XMS7500 Analytical Method: 8270D SIMS (PAH) Analyst: RTS Analytical Date/Time: 08/07/13 20:43 Container ID: 1133443001-A Prep Batch: XXX29531 Prep Method: SW3550C Prep Date/Time: 08/01/13 21:15 Prep Initial Wt./Vol.: 22.705 g Prep Extract Vol: 15 mL

Prep Batch: XXX29531 Prep Method: SW3550C Prep Date/Time: 08/01/13 21:15 Prep Initial Wt./Vol.: 22.705 g Prep Extract Vol: 15 mL

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545							
- Results of P01 Client Sample ID: P01 Client Project ID: AVEC Selawik Lab Sample ID: 1133443001 Lab Project ID: 1133443				Collection Received Matrix: S Solids (%	Date: 07/30/ Date: 07/31/ oil/Solid (dry w ): 47.8	13 09:18 13 09:48 /eight)	
Results by Semivolatile Organic Fuels	;						
<u>Parameter</u> Diesel Range Organics	<u>Result</u> 83100	<u>Qual</u>	<u>LOQ/CL</u> 4310	<u>DL</u> 1340	<u>Units</u> mg/Kg	<u>DF</u> 20	Date Analyzed 08/09/13 19:59
Surrogates 5a Androstane	0	*	50-150		%	20	08/09/13 19:59
Batch Information Analytical Batch: XFC11005 Analytical Method: AK102 Analyst: EAB Analytical Date/Time: 08/09/13 19:59 Container ID: 1133443001-A			F F F	Prep Batch: XX Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	(X29544 SW3550C e: 08/02/13 20:3 Vol.: 30.276 g ol: 5.2 mL	80	
<u>Parameter</u> Residual Range Organics	<u>Result</u> 6040	<u>Qual</u>	<u>LOQ/CL</u> 862	<u>DL</u> 267	<u>Units</u> mg/Kg	<u>DF</u> 4	Date Analyzed 08/06/13 05:36
Surrogates n-Triacontane-d62	0	*	50-150		%	4	08/06/13 05:36
Batch Information Analytical Batch: XFC10991 Analytical Method: AK103 Analyst: EAB Analytical Date/Time: 08/06/13 05:36 Container ID: 1133443001-A			F F F F	Prep Batch: XX Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	(X29544 SW3550C e: 08/02/13 20:3 Vol.: 30.276 g ol: 5.2 mL	30	

Dient Sample ID: <b>P01</b> Dient Project ID: <b>AVEC Selawik</b>			Collection			
Client Project ID: AVEC Selawik			Conection	Date: 07/30	/13 09:18	
			Received I	Date: 07/31/	13 09:48	
Lab Sample ID: 1133443001			Matrix: So	il/Solid (dry v	weight)	
Results by TCLP Constituents Metals	i					
Parameter	Result Qual	LOQ/CL	DL	<u>Units</u>	DF	Date Analyzed
Lead	0.0303 J	0.0500	0.0155	mg/L	25	08/03/13 02:45
Lead Batch Information	0.0303 J	0.0500	0.0155	mg/L	25	08/03/13 02:45
Lead Batch Information Analytical Batch: MMS8103	0.0303 J	0.0500	0.0155 rep Batch: MX	<b>mg/L</b>	25	08/03/13 02:45
Lead Batch Information Analytical Batch: MMS8103 Analytical Method: SW6020 TCLP	0.0303 J	0.0500 P P	0.0155 Prep Batch: MX Prep Method: S	mg/L T4897 W3010A	25	08/03/13 02:45
Lead Batch Information Analytical Batch: MMS8103 Analytical Method: SW6020 TCLP Analyst: NRB Analyst: NRB	0.0303 J	0.0500 P P	0.0155 Prep Batch: MX Prep Method: SV Prep Date/Time:	mg/L T4897 N3010A 08/02/13 11:	<b>25</b>	08/03/13 02:45

Results by Volatile Fuels         Parameter       Result       Qual       LOQ/CL       DL       Units       DE       Date Analyz         Gasoline Range Organics       322       23.0       6.89       mg/Kg       2       08/07/13 21:         Surrogates	Results by Volatile FuelsParameterResultQualLOQ/CLDIGasoline Range Organics32223.06.1Surrogates4-Bromofluorobenzene547*50-150Batch InformationAnalytical Batch: VFC11555Prep B.Analytical Method:AK101Prep MAnalytical Date/Time:08/07/13 21:11Prep InContainer ID:1133443001-BPrep EParameterResultQualLOQ/CLBenzene102J115Ethylbenzene103023071o-Xylene1490023071P & M -Xylene1270045913Toluene88723071Batch Information95.772-119	L <u>Units DF Date Analyzed</u> 89 mg/Kg 2 08/07/13 21:11 % 2 08/07/13 21:11
Parameter Gasoline Range OrganicsResult 322Qual 23.0LOQ/CL 6.89DL mg/KgUnits DF 	ParameterResultQualLOQ/CLDIGasoline Range Organics32223.06.1Surrogates4-Bromofluorobenzene547*50-150Batch InformationAnalytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 21:11 Container ID: 1133443001-BPrep M Prep D Prep EParameterResultQualLOQ/CLDI Prep In Prep EParameterResultQualLOQ/CLDI Benzene102J11536Ethylbenzene103023071 90-Xylene1490023071 9Surrogates1270045913 3 71,4-Difluorobenzene95.772-119	L         Units         DF         Date Analyzed           .89         mg/Kg         2         08/07/13 21:11           %         2         08/07/13 21:11
Surrogates         4-Bromofluorobenzene       547 * 50-150       % 2       08/07/13 21:         Batch Information       Prep Batch: VXX25028       Prep Method: SW5035A         Analytical Batch: VFC11555       Prep Date/Time: 07/30/13 09:18       Prep Date/Time: 07/30/13 09:18         Analytical Date/Time: 08/07/13 21:11       Prep Date/Time: 07/30/13 09:18       Prep Date/Time: 07/30/13 09:18         Prep Date/Time: 08/07/13 21:11       Prep Date/Time: 07/30/13 09:18       Prep Date/Time: 07/30/13 09:18         Parameter       Result       Qual       LOQ/CL       DL       Units       DF       Date Analyz:         Benzene       102       J       115       36.7       ug/Kg       2       08/07/13 21:         c-Xylene       14900       230       71.6       ug/Kg       2       08/07/13 21:         c-Xylene       12700       459       138       ug/Kg       2       08/07/13 21:         Toluene       887       230       71.6       ug/Kg       2       08/07/13 21:         Surrogates	Surrogates4-Bromofluorobenzene547 * 50-150Batch InformationAnalytical Batch: VFC11555Analytical Method: AK101Analytical Method: AK101Analytical Date/Time: 08/07/13 21:11Container ID: 1133443001-BParameterResultQualLOQ/CLDiBenzene102JEthylbenzene103023071o-Xylene1490088723071Surrogates1,4-Difluorobenzene95.772-119	% 2 08/07/13 21:11
Batch InformationAnalytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 21:11 Container ID: 1133443001-BPrep Batch: VXX25028 Prep Date/Time: 07/30/13 09:18 Prep Initial Wt./vol.: 43.382 g Prep Extract Vol: 47.6341 mLParameterResult QualLOQ/CLDLUnitsDEDate Analyz Date Analyz Date Analyz 2Benzene102J11536.7ug/Kg208/07/13 21:21 2Ethylbenzene103023071.6ug/Kg208/07/13 21:21 2o-Xylene1490023071.6ug/Kg208/07/13 21:21 2b M -Xylene12700459138ug/Kg208/07/13 21:21 2Surrogates1,4-Difluorobenzene95.772-119%208/07/13 21:21Batch InformationAnalytical Batch: VFC11555 Analytical Method: SW8021BPrep Batch: VXX25028 Prep Method: SW5035A Prep Method: SW5035APrep Method: SW5035A Prep Method: SW5035A	Batch InformationAnalytical Batch: VFC11555Prep BachAnalytical Method: AK101Prep MAnalyst: STPrep DAnalytical Date/Time: 08/07/13 21:11Prep InContainer ID: 1133443001-BPrep EaParameterResult QualLOQ/CLBenzene102JEthylbenzene1030230OrXylene14900230P & M -Xylene12700459Joluene887230Surrogates1,4-Difluorobenzene95.7Totuene95.772-119	
Parameter         Result         Qual         LOQ/CL         DL         Units         DF         Date Analyza           Benzene         102         J         115         36.7         ug/Kg         2         08/07/13 21:           Ethylbenzene         1030         230         71.6         ug/Kg         2         08/07/13 21:           o-Xylene         14900         230         71.6         ug/Kg         2         08/07/13 21:           P & M -Xylene         12700         459         138         ug/Kg         2         08/07/13 21:           Toluene         887         230         71.6         ug/Kg         2         08/07/13 21:           Surrogates         1,4-Difluorobenzene         95.7         72-119         %         2         08/07/13 21:           Batch Information         Analytical Batch: VFC11555         Prep Batch: VXX25028         Prep Method: SW5035A	Parameter         Result         Qual         LOQ/CL         DI           Benzene         102         J         115         36           Ethylbenzene         1030         230         71           o-Xylene         14900         230         71           P & M -Xylene         12700         459         13           Toluene         887         230         71           Surrogates         1,4-Difluorobenzene         95.7         72-119	atch: VXX25028 lethod: SW5035A bate/Time: 07/30/13 09:18 hitial Wt./Vol.: 43.382 g Extract Vol: 47.6341 mL
Surrogates         1,4-Difluorobenzene       95.7       72-119       %       2       08/07/13 21:         Batch Information         Analytical Batch: VFC11555       Prep Batch: VXX25028         Analytical Method: SW8021B       Prep Method: SW5035A	Surrogates 1,4-Difluorobenzene 95.7 72-119 Batch Information	LUnitsDFDate Analyzed3.7ug/Kg208/07/13 21:111.6ug/Kg208/07/13 21:111.6ug/Kg208/07/13 21:1138ug/Kg208/07/13 21:111.6ug/Kg208/07/13 21:11
Batch Information         Analytical Batch: VFC11555         Prep Batch: VXX25028         Analytical Method: SW8021B         Prep Method: SW5035A         Prep Date (First)         OT	Batch Information	% 2 08/07/13 21:11
Analyst: STPrep Date/Time: 07/30/13 09:18Analytical Date/Time: 08/07/13 21:11Prep Initial Wt./Vol.: 43.382 gContainer ID: 1133443001-BPrep Extract Vol: 47.6341 mL	Analytical Batch: VFC11555Prep BAnalytical Method: SW8021BPrep MAnalyst: STPrep DAnalytical Date/Time: 08/07/13 21:11Prep InContainer ID: 1133443001-BPrep E	atch: VXX25028 lethod: SW5035A )ate/Time: 07/30/13 09:18 nitial Wt./Vol.: 43.382 g ixtract Vol: 47.6341 mL

Client Sample ID: <b>P02</b> Client Project ID: <b>AVEC Selawik</b> .ab Sample ID: 1133443002 .ab Project ID: 1133443			Collectior Received Matrix: S Solids (%	Date: 07/30/ Date: 07/31/ oil/Solid (dry v ): 29.9	13 09:27 13 09:48 veight)	
Results by Semivolatile Organic Fuel	5					
Parameter Diesel Range Organics	<u>Result</u> <u>Qual</u> 1880	<u>LOQ/CL</u> 264	<u>DL</u> 81.8	<u>Units</u> mg/Kg	<u>DF</u> 4	Date Analyzed 08/06/13 06:18
<b>irrogates</b> 5a Androstane	85.7	50-150		%	4	08/06/13 06:18
Batch InformationAnalytical Batch: XFC10991Analytical Method: AK102Analyst: EABAnalytical Date/Time: 08/06/13 06:18Container ID: 1133443002-A		F F F F	Prep Batch: XX Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	(X29544 SW3550C e: 08/02/13 20:3 Vol.: 30.39 g bl: 1 mL	30	
Parameter	Result Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	<u>DF</u>	Date Analyzed
	10500	059	204	mg/Kg	10	00/09/13 19.39
n-Triacontane-d62	92.1	50-150		%	10	08/09/13 19:39
Batch Information						
Analytical Batch: XFC11005 Analytical Method: AK103 Analyst: EAB Analytical Date/Time: 08/09/13 19:39 Container ID: 1133443002-A		F F F F	Prep Batch: XX Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	(X29544 SW3550C e: 08/02/13 20:3 Vol.: 30.39 g vl: 1 mL	30	

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Client Sample ID: <b>P02</b> Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443002 Lab Project ID: 1133443 Results bv <b>Volatile Fuels</b> <u>Parameter</u> <u>F</u> Gasoline Range Organics <b>urrogates</b> 4-Bromofluorobenzene <b>Batch Information</b> Analytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 21:29	Result 109 45	Qual *	LOQ/CL 21.1 50-150	Collection Received Matrix: So Solids (%) <u>DL</u> 6.32	Date: 07/30/ <sup>-</sup> Date: 07/31/1 pil/Solid (dry w ): 29.9 <u>Units</u> mg/Kg	13 09:27 3 09:48 reight) <u>DF</u> 1	<u>Date Analyzed</u> 08/07/13 21:29
Results bv Volatile Fuels         Parameter       F         Gasoline Range Organics       F         urrogates       4-Bromofluorobenzene         Batch Information       F         Analytical Batch: VFC11555       Analytical Method: AK101         Analytical Date/Time: 08/07/13 21:29	Result 109 45	<u>Qual</u> *	LOQ/CL 21.1 50-150	<u>DL</u> 6.32	<u>Units</u> mg/Kg	<u>DF</u> 1	Date Analyzed 08/07/13 21:29
Parameter       F         Gasoline Range Organics       urrogates         4-Bromofluorobenzene       4         Batch Information       Analytical Batch: VFC11555         Analytical Method: AK101       Analytical Method: AK101         Analytical Date/Time: 08/07/13 21:29       08/07/13 21:29	<u>Result</u> 109 45	Qual *	<u>LOQ/CL</u> 21.1 50-150	<u>DL</u> 6.32	<u>Units</u> mg/Kg	<u>DF</u> 1	Date Analyzed 08/07/13 21:29
urrogates 4-Bromofluorobenzene Batch Information Analytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 21:29	45	*	50-150	0.02		·	00,01,10 21.20
4-Bromofluorobenzene Batch Information Analytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 21:29	45	*	50-150		<i></i>		
Batch Information Analytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 21:29					%	1	08/07/13 21:29
Analytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 21:29							
Container ID: 1133443002-B			F F F F	Prep Batch: VX Prep Method: S Prep Date/Time Prep Initial Wt./N Prep Extract Vol	X25028 ;W5035A : 07/30/13 09:2 /ol.: 44.507 g l: 56.1799 mL	7	
Parameter F	Result	Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	DF	Date Analyzed
Benzene	67.4	U	105	33.7	ug/Kg	1	08/07/13 21:29
Ethylbenzene	132	U	211	65.8	ug/Kg	1	08/07/13 21:29
	240		211	65.8	ug/Kg	1	08/07/13 21:29
Toluene	3780	J	422 211	65.8	ug/Kg	1	08/07/13 21:29
urrogates	04.0		72 110		0/	4	00/07/12 21:20
Ratab Information	94.9		72-119		70	I	00/07/13 21.29
Analytical Batch: VFC11555			F	Prep Batch: VX	X25028		
Analytical Method: SW8021B			F	Prep Method: S	W5035A		
Analyst: ST			F	Prep Date/Time	: 07/30/13 09:2	7	
Container ID: 1133443002-B			F	Prep Extract Vol	l: 56.1799 mL		

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### Results of P03

Client Sample ID: **P03** Client Project ID: **AVEC Selawik** Lab Sample ID: 1133443003 Lab Project ID: 1133443 Collection Date: 07/30/13 09:34 Received Date: 07/31/13 09:48 Matrix: Soil/Solid (dry weight) Solids (%): 46.0

## Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	Qual	LOQ/CL	DL	<u>Units</u>	<u>DF</u>	Date Analyzed
1-Methylnaphthalene	177000		38800	11600	ug/Kg	400	08/07/13 20:58
2-Methylnaphthalene	316000		38800	11600	ug/Kg	400	08/07/13 20:58
Acenaphthene	5570		1940	582	ug/Kg	20	08/05/13 17:19
Acenaphthylene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Anthracene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Benzo(a)Anthracene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Benzo[a]pyrene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Benzo[b]Fluoranthene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Benzo[g,h,i]perylene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Benzo[k]fluoranthene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Chrysene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Dibenzo[a,h]anthracene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Fluoranthene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Fluorene	9730		1940	582	ug/Kg	20	08/05/13 17:19
Indeno[1,2,3-c,d] pyrene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Naphthalene	127000		38800	11600	ug/Kg	400	08/07/13 20:58
Phenanthrene	5890		1940	582	ug/Kg	20	08/05/13 17:19
Pyrene	1164	U	1940	582	ug/Kg	20	08/05/13 17:19
Surrogates							
2-Fluorobiphenyl	7010	*	45-105		%	20	08/05/13 17:19
Terphenyl-d14	256	*	30-125		%	20	08/05/13 17:19

### **Batch Information**

Analytical Batch: XMS7494 Analytical Method: 8270D SIMS (PAH) Analyst: RTS Analytical Date/Time: 08/05/13 17:19 Container ID: 1133443003-A

Analytical Batch: XMS7500 Analytical Method: 8270D SIMS (PAH) Analyst: RTS Analytical Date/Time: 08/07/13 20:58 Container ID: 1133443003-A Prep Batch: XXX29531 Prep Method: SW3550C Prep Date/Time: 08/01/13 21:15 Prep Initial Wt./Vol.: 22.706 g Prep Extract Vol: 9 mL

Prep Batch: XXX29531 Prep Method: SW3550C Prep Date/Time: 08/01/13 21:15 Prep Initial Wt./Vol.: 22.706 g Prep Extract Vol: 9 mL

Print Date: 08/14/2013 9:31:55AM

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SGS							
Results of <b>P03</b>							
Client Sample ID: <b>P03</b> Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443003 Lab Project ID: 1133443				Collectior Received Matrix: S Solids (%	n Date: 07/30/1 Date: 07/31/1 soil/Solid (dry w b): 46.0	3 09:34 3 09:48 eight)	
Results by Semivolatile Organic Fuels	5						
Parameter	Result	Qual	100/01	וח	Units	DF	Date Analyzed
Diesel Range Organics	57900	Quar	3690	<u>DE</u> 1150	ma/Ka	20	08/09/13 20:20
Surrogates					0 0		
5a Androstane	0	*	50-150		%	20	08/09/13 20:20
Batch Information							
Analytical Batch: XFC11005 Analytical Method: AK102 Analyst: EAB Analytical Date/Time: 08/09/13 20:20 Container ID: 1133443003-A			F F F F	Prep Batch: X> Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	KX29544 SW3550C e: 08/02/13 20:3 Vol.: 30.375 g ol: 4.3 mL	0	
Parameter Residual Range Organics	<u>Result</u> 6670	<u>Qual</u>	<u>LOQ/CL</u> 739	<u>DL</u> 229	<u>Units</u> mg/Kg	<u>DF</u> 4	<u>Date Analyzed</u> 08/06/13 06:38
Surrogates							
n-Triacontane-d62	0	*	50-150		%	4	08/06/13 06:38
Batch Information Analytical Batch: XFC10991 Analytical Method: AK103 Analyst: EAB Analytical Date/Time: 08/06/13 06:38 Container ID: 1133443003-A			F F F	Prep Batch: XX Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vc	(X29544 SW3550C e: 08/02/13 20:3 Vol.: 30.375 g bl: 4.3 mL	0	

esults of P03							
lient Sample ID: P03				Collection	Date: 07/30	/13 09:34	
Client Project ID: AVEC Selawik				Received I	Date: 07/31/	13 09:48	
Lab Sample ID: 1133443003				Matrix: So	Il/Solid (dry	weight)	
Results by ICLP Constituents Metals	<b>`</b>						
Results by TCLP Constituents Metals	<b>D</b> esult O	)	1.00/61	DI	Linita		Data Arabizad
Parameter	Result Q	<u>)ual</u>	LOQ/CL	DL	<u>Units</u>	<u>DF</u>	Date Analyzed
Parameter Lead	• <u>Result</u> <u>Q</u> 0.0310	<u>)ual</u> U	<u>LOQ/CL</u> 0.0500	<u>DL</u> 0.0155	<u>Units</u> mg/L	<u>DF</u> 25	<u>Date Analyzed</u> 08/03/13 02:56
Results by TCLP Constituents Metals	• <u>Result</u> <u>Q</u> 0.0310	<u>∂ual</u> U	LOQ/CL 0.0500	<u>DL</u> 0.0155	<u>Units</u> mg/L	<u>DF</u> 25	Date Analyzed 08/03/13 02:56
Results by TCLP Constituents Metals Parameter Lead Batch Information Analytical Batch: MMS8103	• <u>Result</u> <u>Q</u> 0.0310	<u>Qual</u> U	LOQ/CL 0.0500	DL 0.0155 rep Batch: MX	Units mg/L	<u>DF</u> 25	<u>Date Analyzed</u> 08/03/13 02:56
Batch Information         Analytical Batch:         MMS8103         Analytical Method:         SW6020 TCLP	• <u>Result</u> <u>Q</u> 0.0310	<u>∂ual</u> U	LOQ/CL 0.0500	DL 0.0155 rep Batch: MX rep Method: S <sup>1</sup>	<u>Units</u> mg/L 14897 W3010A	<u>DF</u> 25	<u>Date Analyzed</u> 08/03/13 02:56
Results by TCLP Constituents Metals         Parameter         Lead         Batch Information         Analytical Batch: MMS8103         Analytical Method: SW6020 TCLP         Analyst: NRB	• <u>Result</u> <u>Q</u> 0.0310	<u>)ual</u> U	LOQ/CL 0.0500	DL 0.0155 rep Batch: MX rep Method: SV rep Date/Time:	<u>Units</u> mg/L 14897 W3010A 08/02/13 11:	<u>DF</u> 25	Date Analyzed 08/03/13 02:56
Results by ICLP Constituents Metals         Parameter         Lead         Batch Information         Analytical Batch: MMS8103         Analytical Method: SW6020 TCLP         Analytic NRB         Analytical Date/Time: 08/03/13 02:56	• <u>Result</u> <u>Q</u> 0.0310	<u>Qual</u> U	LOQ/CL 0.0500	DL 0.0155 rep Batch: MX rep Method: St rep Date/Time: rep Initial Wt./V	<u>Units</u> mg/L F4897 W3010A 08/02/13 11: ol.: 2.5 mL	DF 25	<u>Date Analyzed</u> 08/03/13 02:56

<b>343</b>									
Results of P03		-							
Client Sample ID: <b>P03</b> Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443003 Lab Project ID: 1133443			Collection Date: 07/30/13 09:34 Received Date: 07/31/13 09:48 Matrix: Soil/Solid (dry weight) Solids (%): 46.0						
Results by Volatile Fuels									
<u>Parameter</u> Gasoline Range Organics	<u>Result</u> 339	<u>Qual</u>	<u>LOQ/CL</u> 22.6	<u>DL</u> 6.77	<u>Units</u> mg/Kg	<u>DF</u> 2	Date Analyzed 08/07/13 21:48		
Surrogates 4-Bromofluorobenzene	542	*	50-150		%	2	08/07/13 21:48		
Batch Information Analytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 21:48 Container ID: 1133443003-B			P P P P	rep Batch: V> rep Method: S rep Date/Time rep Initial Wt./ rep Extract Vo	KX25028 SW5035A e: 07/30/13 09:3 Vol.: 50.19 g bl: 52.1125 mL	4			
Parameter Benzene Ethylbenzene o-Xylene P & M -Xylene Toluene	<u>Result</u> 370 2750 18300 15300 1050	Qual	LOQ/CL 113 226 226 452 226	<u>DL</u> 36.1 70.5 70.5 135 70.5	<u>Units</u> ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg	DF 2 2 2 2 2 2	Date Analyzed 08/07/13 21:48 08/07/13 21:48 08/07/13 21:48 08/07/13 21:48 08/07/13 21:48		
Surrogates 1,4-Difluorobenzene	97.2		72-119		%	2	08/07/13 21:48		
Batch Information									
Analytical Batch: VFC11555 Analytical Method: SW8021B Analyst: ST Analytical Date/Time: 08/07/13 21:48 Container ID: 1133443003-B			P P P P	rep Batch: VX rep Method: S rep Date/Time rep Initial Wt./ rep Extract Vc	KX25028 SW5035A e: 07/30/13 09:3 Vol.: 50.19 g bl: 52.1125 mL	4			

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SGS							
Results of <b>P05</b> Client Sample ID: <b>P05</b> Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443004 Lab Project ID: 1133443				Collectio Received Matrix: S Solids (%	n Date: 07/30/ <sup>/</sup> d Date: 07/31/1 Soil/Solid (dry w 6): 37.4	13 09:52 3 09:48 eight)	
Results by Semivolatile Organic Fuels	5						
<u>Parameter</u> Diesel Range Organics	<u>Result</u> 5930	<u>Qual</u>	<u>LOQ/CL</u> 916	<u>DL</u> 284	<u>Units</u> mg/Kg	<u>DF</u> 4	Date Analyzed 08/06/13 07:19
Surrogates 5a Androstane	83.5		50-150		%	4	08/06/13 07:19
Batch Information Analytical Batch: XFC10991 Analytical Method: AK102 Analyst: EAB Analytical Date/Time: 08/06/13 07:19 Container ID: 1133443004-A			P P P P	rep Batch: X. rep Method: rep Date/Tim rep Initial Wt. rep Extract Ve	XX29544 SW3550C e: 08/02/13 20:3 /Vol.: 30.102 g ol: 4.3 mL	0	
<u>Parameter</u> Residual Range Organics	<u>Result</u> 10600	<u>Qual</u>	<u>LOQ/CL</u> 916	<u>DL</u> 284	<u>Units</u> mg/Kg	<u>DF</u> 4	Date Analyzed 08/06/13 07:19
<b>Surrogates</b> n-Triacontane-d62	115		50-150		%	4	08/06/13 07:19
Batch Information Analytical Batch: XFC10991 Analytical Method: AK103 Analyst: EAB Analytical Date/Time: 08/06/13 07:19 Container ID: 1133443004-A			Р Р Р Р	rep Batch: X. rep Method: rep Date/Tim rep Initial Wt. rep Extract V	XX29544 SW3550C e: 08/02/13 20:3 /Vol.: 30.102 g ol: 4.3 mL	0	

Client Sample ID: <b>P05</b> Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443004 Lab Project ID: 1133443				Collectior Received Matrix: S Solids (%	n Date: 07/30/ Date: 07/31/ oil/Solid (dry w ): 37.4	13 09:52 13 09:48 veight)	
Results by Volatile Fuels							
<u>Parameter</u> Gasoline Range Organics	<u>Result</u> 45.9	<u>Qual</u>	<u>LOQ/CL</u> 17.0	<u>DL</u> 5.10	<u>Units</u> mg/Kg	<u>DF</u> 1	Date Analyzed 08/07/13 06:09
<b>urrogates</b> 4-Bromofluorobenzene	95.2		50-150		%	1	08/07/13 06:09
Batch Information Analytical Batch: VFC11554 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 06:09 Container ID: 1133443004-B				Prep Batch: V> Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	(X25023 SW5035A e: 07/30/13 09:5 Vol.: 38.584 g bl: 49.1414 mL	52	
<u>Parameter</u> Benzene Ethylbenzene o-Xylene P & M -Xylene Toluene	Result 54.4 93.6 2070 1230 2080	<u>Qual</u> U J	LOQ/CL 85.1 170 170 340 170	<u>DL</u> 27.2 53.1 53.1 102 53.1	<u>Units</u> ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg	DF 1 1 1 1 1	Date Analyzed 08/07/13 06:09 08/07/13 06:09 08/07/13 06:09 08/07/13 06:09 08/07/13 06:09
<b>urrogates</b> 1,4-Difluorobenzene	95.7		72-119		%	1	08/07/13 06:09
Batch Information							
Analytical Batch: VFC11554 Analytical Method: SW8021B Analyst: ST Analytical Date/Time: 08/07/13 06:09 Container ID: 1133443004-B				Prep Batch: V> Prep Method: Prep Date/Time Prep Initial Wt./ Prep Extract Vo	(X25023 SW5035A e: 07/30/13 09:5 Vol.: 38.584 g bl: 49.1414 mL	52	

Results of P10				Collection [	)ate: 07/30/	13 10.13				
Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443005 Lab Project ID: 1133443			Received Date: 07/31/13 09:48 Matrix: Soil/Solid (dry weight) Solids (%): 33.5							
Results by Semivolatile Organic Fuels	;									
Parameter	<u>Result</u>	<u>Qual</u>	LOQ/CL	<u>DL</u>	<u>Units</u>	DF	Date Analyzed			
Diesel Range Organics	2100		790	245	mg/Kg	2	08/09/13 18:58			
urrogates						_				
5a Androstane	107		50-150		%	2	08/09/13 18:58			
Batch Information										
Analytical Batch: XFC11005 Analytical Method: AK102				Prep Batch: XXX Prep Method: SV	29544 V3550C					
Analyst: EAB Analytical Date/Time: 08/09/13 18:58				Prep Date/Time: Prep Initial Wt./Vo	08/02/13 20:3 bl.: 30.387 q	60				
Container ID: 1133443005-A				Prep Extract Vol:	6.7 mL					
Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed			
Residual Range Organics	9960		790	245	mg/Kg	2	08/09/13 18:58			
urrogates										
n-Triacontane-d62	112		50-150		%	2	08/09/13 18:58			
Batch Information										
Analytical Batch: XFC11005				Prep Batch: XXX	29544					
Analyst: EAB				Prep Date/Time:	08/02/13 20:3	0				
Analytical Date/Time: 08/09/13 18:58				Prep Initial Wt./Vo	ol.: 30.387 g					
Container ID. 1133443005-A				Prep Extract vol.	0.7 IIIL					

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Results of <b>P10</b> Client Sample ID: <b>P10</b> Client Project ID: <b>AVEC</b> Lab Sample ID: 113344 Lab Project ID: 1133443	<b>Selawik</b> 3005 3			Collectior Received Matrix: S Solids (%	n Date: 07/30/ Date: 07/31/ Goil/Solid (dry v b): 33.5	13 10:13 13 09:48 veight)	
Results by Volatile Fuel	s						
<u>Parameter</u> Gasoline Range Organics	<u>Resi</u> 5.6	<u>ılt Qu</u> 51 J	<u>al LOQ/CL</u> 17.8	<u>_ DL</u> 5.34	<u>Units</u> mg/Kg	<u>DF</u> 1	Date Analyzed 08/07/13 17:22
urrogates 4-Bromofluorobenzene	3	60 *	50-150		%	1	08/07/13 17:22
Batch Information Analytical Batch: VFC11 Analytical Method: AK10 Analyst: ST Analytical Date/Time: 08 Container ID: 11334430	1555 01 3/07/13 17:22 05-B			Prep Batch: V Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	KX25028 SW5035A e: 07/30/13 10:1 Vol.: 47.307 g bl: 56.4614 mL	13	
Parameter Benzene Ethylbenzene o-Xylene P & M -Xylene Toluene	<u>Resi</u> 57 11 11 11 21	ult Qu 0 U 1 U 1 U 4 U 0 J	al <u>LOQ/CL</u> 89.1 178 178 356 178	<u>DL</u> 28.5 55.6 55.6 107 55.6	<u>Units</u> ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg	<u>DF</u> 1 1 1 1	Date Analyzed 08/07/13 17:22 08/07/13 17:22 08/07/13 17:22 08/07/13 17:22 08/07/13 17:22
<b>urrogates</b> 1,4-Difluorobenzene	95	.3	72-119		%	1	08/07/13 17:22
Batch Information Analytical Batch: VFC11 Analytical Method: SW8 Analyst: ST Analytical Date/Time: 08 Container ID: 11334430	1555 021B 3/07/13 17:22 05-B			Prep Batch: V) Prep Method: 3 Prep Date/Time Prep Initial Wt./ Prep Extract Vo	KX25028 SW5035A e: 07/30/13 10:1 Vol.: 47.307 g bl: 56.4614 mL	13	

Client Sample ID: <b>P12</b> Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443006 Lab Project ID: 1133443						
Results by <b>Semivolatile Organic Fue</b>	ls					
<u>Parameter</u>	Result Qual	LOQ/CL	DL	<u>Units</u>	<u>DF</u>	Date Analyzed
Diesel Range Organics	31.9	25.7	7.97	mg/Kg	1	08/06/13 02:33
irrogates				<u>.</u>		
a Androstane	98.2	50-150		%	1	08/06/13 02:33
Batch Information						
Analytical Batch: XFC10991 Analytical Method: AK102 Analyst: EAB Analytical Date/Time: 08/06/13 02:33 Container ID: 1133443006-A		P P P P	rep Batch: XX rep Method: S rep Date/Time rep Initial Wt./ rep Extract Vo	(X29544 GW3550C :: 08/02/13 20:3 Vol.: 30.36 g l: 1 mL	30	
<sup>2</sup> arameter	Result Qual	LOQ/CL	DL	<u>Units</u>	DF	Date Analyzed
Residual Range Organics	298	25.7	7.97	mg/Kg	1	08/06/13 02:33
urrogates	00.0	50.450		0/		00/00/40 00 00
1- I riacontane-d62	89.3	50-150		%	1	08/06/13 02:33
3atch Information						
Analytical Batch: XFC10991 Analytical Method: AK103 Analyst: EAB Analytical Date/Time: 08/06/13 02:33 Container ID: 1133443006-A		P P P P	rep Batch: XX rep Method: S rep Date/Time rep Initial Wt./ rep Extract Vo	(X29544 SW3550C :: 08/02/13 20:3 Vol.: 30.36 g I: 1 mL	30	

Client Project ID: AVEC Selawik         Lab Sample ID: 1133443006         Lab Project ID: 1133443         Results bv Volatile Fuels         Parameter       Result Qual         Gasoline Range Organics       1.50       J         Surrogates         4-Bromofluorobenzene       128       5         Batch Information         Analytical Batch: VFC11555         Analytical Method: AK101         Analytical Date/Time: 08/07/13 17:47         Container ID: 1133443006-B         Parameter         Result Qual         Benzene         10.8       1         Ethylbenzene       21.0       U         o-Xylene       21.0       U       3         P& M -Xylene       40.4       0       6         Toluene       234       3	LOQ/CL 3.37 50-150 Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr P	DL 1.01 DL 1.01 DL 1.01	Units mg/Kg % (X25028 SW5035A e: 07/30/13 10:2 Vol.: 87.163 g bl: 45.1646 mL Units	<u>DF</u> 1 1 1	Date Analyzed 08/07/13 17:47 08/07/13 17:47
Results by Volatile Fuels         Parameter       Result       Qual       L         Gasoline Range Organics       1.50       J       3         urrogates       1.50       J       3         4-Bromofluorobenzene       128       5         Batch Information       128       5         Analytical Batch: VFC11555       Analytical Method: AK101         Analytical Date/Time: 08/07/13 17:47       Container ID: 1133443006-B         Parameter       Result Qual       L         Benzene       10.8       1         Ethylbenzene       21.0       U       3         o-Xylene       40.4       0       6         Toluene       234       3       3         urrogates       1,4-Difluorobenzene       94.8       7	LOQ/CL 3.37 50-150 Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr P	DL 1.01 ep Batch: VX ep Method: S ep Date/Time ep Initial Wt./v ep Extract Vo DL 5.39 10.5 10.5	<u>Units</u> mg/Kg % (X25028 SW5035A e: 07/30/13 10:2 Vol.: 87.163 g bl: 45.1646 mL <u>Units</u>	<u>DF</u> 1 1	<u>Date Analyzed</u> 08/07/13 17:47 08/07/13 17:47
ParameterResultQualLGasoline Range Organics1.50J3urrogates4-Bromofluorobenzene1285Batch InformationAnalytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 17:47 Container ID: 1133443006-BParameterResultQualLBenzene10.8U1Ethylbenzene21.0U3o-Xylene21.0U3P & M -Xylene40.4U6Toluene23433urrogates1,4-Difluorobenzene94.87	LOQ/CL 3.37 50-150 Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr P	DL 1.01 ep Batch: VX ep Method: S ep Date/Time ep Initial Wt./V ep Extract Vo DL 5.39 10.5 10.5	Units mg/Kg % X25028 SW5035A e: 07/30/13 10:2 Vol.: 87.163 g bl: 45.1646 mL Units	DF 1 1	Date Analyzed 08/07/13 17:47 08/07/13 17:47
urrogates         4-Bromofluorobenzene       128       5         Batch Information         Analytical Batch: VFC11555         Analytical Method: AK101         Analytical Date/Time: 08/07/13 17:47         Container ID: 1133443006-B         Parameter       Result Qual       L         Benzene       10.8       U       1         Ethylbenzene       21.0       U       3         o-Xylene       40.4       U       6         Toluene       234       3       3         urrogates       1,4-Difluorobenzene       94.8       7	50-150 Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr 23.7 33.7 67.4 33.7	ep Batch: VX ep Method: S ep Date/Time ep Initial Wt./N ep Extract Vo DL 5.39 10.5 10.5	% (X25028 SW5035A e: 07/30/13 10:2 Vol.: 87.163 g bl: 45.1646 mL <u>Units</u>	1	08/07/13 17:47
Batch Information         Analytical Batch: VFC11555         Analytical Method: AK101         Analyst: ST         Analytical Date/Time: 08/07/13 17:47         Container ID: 1133443006-B         Parameter         Result Qual         Benzene         10.8         Ethylbenzene         21.0         0-Xylene         40.4         0         3         P & M -Xylene         40.4         10luene         234         3         turrogates         1,4-Difluorobenzene         94.8	Pr Pr Pr Pr <u>LOQ/CL</u> 16.9 33.7 33.7 67.4 33.7	ep Batch: VX ep Method: S ep Date/Time ep Initial Wt./N ep Extract Vo DL 5.39 10.5 10.5	XX25028 SW5035A e: 07/30/13 10:2 Vol.: 87.163 g bl: 45.1646 mL <u>Units</u>	26	
Analytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 17:47 Container ID: 1133443006-BParameterResult Qual LBenzene10.8 U 21.0 UEthylbenzene21.0 U 3 0-XyleneP & M -Xylene40.4 U 234Induene234Analytical benzene94.87	Pr Pr Pr Pr D Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr Pr	ep Batch: VX ep Method: S ep Date/Time ep Initial Wt./N ep Extract Vo DL 5.39 10.5 10.5	(X25028 SW5035A e: 07/30/13 10:2 Vol.: 87.163 g ol: 45.1646 mL <u>Units</u>	26	
ParameterResultQualLBenzene10.8U1Ethylbenzene21.0U3o-Xylene21.0U3P & M -Xylene40.4U6Toluene2343Surrogates1,4-Difluorobenzene94.87	LOQ/CL 16.9 33.7 33.7 67.4 33.7	<u>DL</u> 5.39 10.5 10.5	<u>Units</u>		
Benzene         10.8         U         1           Ethylbenzene         21.0         U         3           o-Xylene         21.0         U         3           P & M -Xylene         40.4         U         6           Toluene         234         3           urrogates         1         4-Difluorobenzene         94.8         7	16.9 33.7 33.7 67.4 33.7	5.39 10.5 10 5		<u>DF</u>	Date Analyzed
Ethylbenzene       21.0       0       3         o-Xylene       21.0       U       3         P & M -Xylene       40.4       U       6         Toluene       234       3         urrogates       1,4-Difluorobenzene       94.8       7	33.7 33.7 67.4 33.7	10.5 10.5	ug/Kg	1	08/07/13 17:47
P & M - Xylene       40.4       U       6         Toluene       234       3         urrogates       1,4-Difluorobenzene       94.8       7	67.4 33.7	111.5	ug/Kg	1	08/07/13 17:47
Toluene40.400Toluene2343urrogates1,4-Difluorobenzene94.87	33.7	20.2	ug/Kg	1	08/07/13 17:47
urrogates 1,4-Difluorobenzene 94.8 7		10.5	ug/Kg	1	08/07/13 17:47
1,4-Difluorobenzene 94.8 7					
	72-119		%	1	08/07/13 17:47
Batch Information					
Analytical Batch: VFC11555	Pr	ep Batch: VX	X25028		
Analytical Method: SW8021B	Pr	ep Method: S	SW5035A		
Analyst: 51 Analytical Date/Time: 08/07/13 17:47	Pr Pr	ep Date/Time	2: 07/30/13 10:2 Vol: 87 163 a	0	
Container ID: 1133443006-B	Pr	ep Extract Vo	ol: 45.1646 mL		

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Results of BL02-3

Client Sample ID: **BL02-3** Client Project ID: **AVEC Selawik** Lab Sample ID: 1133443007 Lab Project ID: 1133443 Collection Date: 07/30/13 11:48 Received Date: 07/31/13 09:48 Matrix: Soil/Solid (dry weight) Solids (%): 65.4

## Results by Polynuclear Aromatics GC/MS

Parameter	Result Qual	LOQ/CL	DL	<u>Units</u>	DF	Date Analyzed
1-Methylnaphthalene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
2-Methylnaphthalene	2.28 J	7.51	2.25	ug/Kg	1	08/09/13 00:18
Acenaphthene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Acenaphthylene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Anthracene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Benzo(a)Anthracene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Benzo[a]pyrene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Benzo[b]Fluoranthene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Benzo[g,h,i]perylene	6.47 J	7.51	2.25	ug/Kg	1	08/09/13 00:18
Benzo[k]fluoranthene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Chrysene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Dibenzo[a,h]anthracene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Fluoranthene	3.89 J	7.51	2.25	ug/Kg	1	08/09/13 00:18
Fluorene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Indeno[1,2,3-c,d] pyrene	4.50 U	7.51	2.25	ug/Kg	1	08/09/13 00:18
Naphthalene	2.27 J	7.51	2.25	ug/Kg	1	08/09/13 00:18
Phenanthrene	3.17 J	7.51	2.25	ug/Kg	1	08/09/13 00:18
Pyrene	2.41 J	7.51	2.25	ug/Kg	1	08/09/13 00:18
Surrogates						
2-Fluorobiphenyl	96.8	45-105		%	1	08/09/13 00:18
Terphenyl-d14	101	30-125		%	1	08/09/13 00:18

# **Batch Information**

Analytical Batch: XMS7503 Analytical Method: 8270D SIMS (PAH) Analyst: RTS Analytical Date/Time: 08/09/13 00:18 Container ID: 1133443007-A Prep Batch: XXX29561 Prep Method: SW3550C Prep Date/Time: 08/04/13 22:15 Prep Initial Wt./Vol.: 22.918 g Prep Extract Vol: 1 mL

Print Date: 08/14/2013 9:31:55AM

Results by Semivolatile Organic Fuels         Parameter       Result       Qual       LOQ/CL       DL       Units       DE       Date Analyzed         Diesel Range Organics       51.4       30.2       9.37       mg/Kg       1       08/09/13.09:49         urrogates       5       5       4       30.2       9.37       mg/Kg       1       08/09/13.09:49         Batch Information       Prep Batch:       XXX29545       Prep Method:       SW3550C       Prep Method:       SW3550C         Analytical Batch:       XKC11002       Prep Method:       SW3550C       Prep Date/Time:       08/09/13.09:49         Analytical Date/Time:       08/09/13.09:49       Prep Initial Wt./vol.:       30.375 g       Prep Date/Time:       08/09/13.09:49         Prep Initial Wt./vol.:       30.2       9.37       mg/Kg       1       08/09/13.09:49         urrogates       381       30.2       9.37       mg/Kg       1       08/09/13.09:49         n-Triacontane-d62       102       50-150       %       1       08/09/13.09:49         Batch Information       Prep Method:       SW3550C       Prep Method:       SW3550C         Analytical Batch:       XFC11002       Na1       08/09/13.09:49	Results of <b>BL02-3</b> Client Sample ID: <b>BL02-3</b> Client Project ID: <b>AVEC Selawik</b> ab Sample ID: 1133443007 ab Project ID: 1133443	F		Collection Received Matrix: So Solids (%)	Date: 07/30/ Date: 07/31/ pil/Solid (dry v : 65.4	13 11:48 13 09:48 veight)	
ParameterResultQualLOQ/CLDLUnitsDEDate AnalyzedDiesel Range Organics51.430.29.37mg/Kg108/09/13 09:49urrogates5a Androstane83.950-150%108/09/13 09:49Batch InformationAnalytical Batch: XFC11002 Analystical Method: AK102 Analystical Date/Time: 08/09/13 09:49Prep Batch: XXX29545 Prep Method: SW3550C Prep Date/Time: 08/09/13 09:49Prep Batch: 375 g Prep Initial WL/Vol.: 30.375 g Prep Extract Vol: 1 mLParameterResultQualLOQ/CLDLUnitsDEDate Analyzed 08/09/13 09:49ParameterResultQualLOQ/CLDLUnitsDEDate AnalyzedParameterResultQualLOQ/CLDLUnitsDEDate AnalyzedBatch Information38130.29.37mg/Kg108/09/13 09:49ParameterResultQualLOQ/CLDLUnitsDEDate AnalyzedBatch Information10250-150%108/09/13 09:49Analytical Batch: XFC11002 Analytical Batch: XFC11002 Analytical Batch: XFC11002 Analytical Date/Time: 08/09/13 09:49Prep Batch: XX29545 Prep Method: SW3550C Prep Date/Time: 08/03/13 08:40 Prep Initial Wt./Vol.: 30.375 g Prep Date/Time: 08/03/13 08:40 Prep Initial Wt./Vol.: 30.375 g Prep Date/Time: 08/03/13 08:40 Prep Extract Vol: 1 mL	Results by Semivolatile Organic Fuels	3					
Batch Information83.950-150%108/09/13 09:49Batch InformationPrep Batch: XXX29545 Prep Method: SW3550C Prep Date/Time: 08/03/13 08:00 Prep Initial Wt./vol.: 30.375 g Prep Extract Vol: 1 mLPrep Batch: XX29545 Prep Date/Time: 08/03/13 08:00 Prep Initial Wt./vol.: 30.375 g Prep Extract Vol: 1 mLParameterResult Qual Analytical Batch: XFC11002 Analytical Batch: XFC11002 Residual Range OrganicsDiate Analyzed 08/09/13 09:49ParameterResult Qual 102LOQ/CL 9.37Diate Method: Ak102 ng/KgDate Analyzed 08/09/13 09:49ParameterResult Qual 08/09/13 09:49LOQ/CL 9.37Diate Method: Ak103 08/09/13 09:49Analytical Batch: XFC11002 Analytical Batch: XFC11002 Analytical Date/Time: 08/09/13 09:49Prep Batch: XX29545 Prep Method: SW3550C Prep Date/Time: 08/03/13 08:00 Prep Initial Wt./vol.: 30.375 g Prep Date/Time: 08/03/13 08:00 Prep Initial Wt./vol.: 30.375 g Prep Extract Vol: 1 mL	Parameter Diesel Range Organics	<u>Result</u> <u>Qual</u> 51.4	<u>LOQ/CL</u> 30.2	<u>DL</u> 9.37	<u>Units</u> mg/Kg	<u>DF</u> 1	Date Analyzed 08/09/13 09:49
Batch Information         Analytical Batch: XFC11002       Prep Batch: XXX29545         Analytical Method: AK102       Prep Method: SW3550C         Analytical Date/Time: 08/09/13 09:49       Prep Initial Wt./Vol.: 30.375 g         Container ID: 1133443007-A       Prep Extract Vol: 1 mL         Parameter       Result Qual       LOQ/CL       DL       Units       DF       Date Analyzed         Residual Range Organics       381       30.2       9.37       mg/Kg       1       08/09/13 09:49         n-Triacontane-d62       102       50-150       %       1       08/09/13 09:49         Analytical Batch: XFC11002       Prep Batch: XXX29545       Prep Method: SW3550C         Analytical Batch: XFC11002       Prep Batch: XXX29545       Prep Method: SW3550C         Analytical Method: AK103       Prep Method: SW3550C       Prep Method: SW3550C         Analytical Date/Time: 08/09/13 09:49       Prep Method: SW3550C       Prep Method: SW3550C         Analytical Date/Time: 08/09/13 09:49       Prep Date/Time: 08/03/13 08:00       Prep Initial Wt./vol.: 30.375 g         Analytical Date/Time: 08/09/13 09:49       Prep Date/Time: 08/03/13 08:00       Prep Initial Wt./vol.: 30.375 g         Analytical Date/Time: 08/09/13 09:49       Prep Extract Vol: 1 mL       Prep Extract Vol: 1 mL	<b>irrogates</b> a Androstane	83.9	50-150		%	1	08/09/13 09:49
ParameterResultQualLOQ/CLDLUnitsDFDate AnalyzedResidual Range Organics38130.29.37mg/Kg108/09/13 09:49urrogatesn-Triacontane-d6210250-150%108/09/13 09:49Batch InformationAnalytical Batch: XFC11002Analytical Method: AK103Analytical Date/Time: 08/09/13 09:49Container ID: 1133443007-A	Analytical Batch: XFC11002 Analytical Method: AK102 Analyst: EAB Analytical Date/Time: 08/09/13 09:49 Container ID: 1133443007-A		P P P P	rep Batch: XX rep Method: S rep Date/Time: rep Initial Wt./\ rep Extract Vol	X29545 W3550C : 08/03/13 08:0 /ol.: 30.375 g : 1 mL	00	
Analytical Batch: XFC11002       Prep Batch: XXX29545         Analytical Method: AK103       Prep Method: SW3550C         Analytical Date/Time: 08/09/13 09:49       Prep Initial Wt./Vol.: 30.375 g         Container ID: 1133443007-A       Prep Extract Vol: 1 mL	Parameter Residual Range Organics	<u>Result</u> <u>Qual</u> 381	<u>LOQ/CL</u> 30.2	<u>DL</u> 9.37	<u>Units</u> mg/Kg	<u>DF</u> 1	Date Analyzed 08/09/13 09:49
Batch InformationPrep Batch: XXX29545Analytical Batch: XFC11002Prep Batch: XXX29545Analytical Method: AK103Prep Method: SW3550CAnalyst: EABPrep Date/Time: 08/03/13 08:00Analytical Date/Time: 08/09/13 09:49Prep Initial Wt./Vol.: 30.375 gContainer ID: 1133443007-APrep Extract Vol: 1 mL	Irrogates I-Triacontane-d62	102	50-150		%	1	08/09/13 09:49
	Analytical Batch: XFC11002 Analytical Method: AK103 Analyst: EAB Analytical Date/Time: 08/09/13 09:49 Container ID: 1133443007-A		P P P P	rep Batch: XX rep Method: S rep Date/Time: rep Initial Wt./V rep Extract Vol	X29545 W3550C : 08/03/13 08:0 /ol.: 30.375 g : 1 mL	00	

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Results of <b>BL02-3</b>							
Client Sample ID: <b>BL02-3</b> Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443007 Lab Project ID: 1133443				Collection Received Matrix: So Solids (%)	Date: 07/30 Date: 07/31/ bil/Solid (dry : 65.4	/13 11:48 13 09:48 weight)	
Results by ICLP Constituents Metals		<b>a</b> .		51		55	
Parameter Lead	<u>Result</u> 0.0310	<u>Qual</u> U	<u>LOQ/CL</u> 0.0500	<u>DL</u> 0.0155	<u>Units</u> mg/L	<u>DF</u> 25	Date Analyzed 08/03/13 03:03
Batch Information Analytical Batch: MMS8103 Analytical Method: SW6020 TCLP Analyst: NRB Analytical Date/Time: 08/03/13 03:03 Container ID: 1133443007-C			P P P P	rep Batch: MX rep Method: S rep Date/Time: rep Initial Wt./N rep Extract Vol	T4897 W3010A 08/02/13 11: /ol.: 2.5 mL : 25 mL	50	

Results of <b>BL02-3</b> Client Sample ID: <b>BL02-3</b> Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443007				Collection Received Matrix: S	Date: 07/30/ Date: 07/31/ oil/Solid (dry w	13 11:48 13 09:48 veight)	
Results by Volatile Fuels				Solius ( //	). 00.4		
Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Gasoline Range Organics	1.91	J	6.18	1.85	mg/Kg	1	08/05/13 19:51
Surrogates					0.0		
4-Bromofluorobenzene	83.4		50-150		%	1	08/05/13 19:51
Batch Information							
Analytical Batch: VFC11551 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/05/13 19:51 Container ID: 1133443007-B			P P P	rep Batch: VX rep Method: S rep Date/Time rep Initial Wt./ rep Extract Vo	(X25015 SW5035A :: 07/30/13 11:4 Vol.: 54.169 g il: 43.753 mL	8	
Parameter	<u>Result</u>	Qual	LOQ/CL	DL	<u>Units</u>	DF	Date Analyzed
Benzene	19.8	U	30.9	9.88	ug/Kg	1	08/05/13 19:51
Ethylbenzene	38.6	U	61.8	19.3	ug/Kg	1	08/05/13 19:51
o-Xylene	38.6	U	61.8	19.3	ug/Kg	1	08/05/13 19:51
P & M -Xylene	74.2	U	124 61 8	37.1 10.3	ug/Kg	1 1	08/05/13 19:51
	21.0	5	01.0	19.5	ug/rtg	1	08/03/13 19.51
1,4-Difluorobenzene	92.5		72-119		%	1	08/05/13 19:51
Batch Information							
Analytical Batch: VFC11551 Analytical Method: SW8021B Analyst: ST Analytical Date/Time: 08/05/13 19:51 Container ID: 1133443007-B			P P P P	rep Batch: VX rep Method: S rep Date/Time rep Initial Wt./ rep Extract Vo	(X25015 SW5035A :: 07/30/13 11:4 Vol.: 54.169 g il: 43.753 mL	8	

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Results of <b>BL05-3</b> Client Sample ID: <b>BL05-3</b>			Collection	Date: 07/30/	13 11:56	
Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443008 Lab Project ID: 1133443			Received Matrix: So Solids (%)	Date: 07/31/ oil/Solid (dry w ): 64.8	13 09:48 veight)	
Results by Semivolatile Organic Fuel	S					
Parameter	Result Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	<u>DF</u>	Date Analyzed
Diesel Range Organics	52.9	30.7	9.51	mg/Kg	1	08/09/13 09:59
<b>urrogates</b> 5a Androstane	88.8	50-150		%	1	08/09/13 09:59
Batch Information						
Analytical Batch: XFC11002 Analytical Method: AK102 Analyst: EAB Analytical Date/Time: 08/09/13 09:59 Container ID: 1133443008-A		P P P P	rep Batch: XX rep Method: S rep Date/Time rep Initial Wt./ rep Extract Vo	(X29545 3W3550C : 08/03/13 08:0 Vol.: 30.207 g l: 1 mL	00	
Parameter	<u>Result</u> Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	DF	Date Analyzed
Residual Range Organics	413	30.7	9.51	mg/Kg	1	08/09/13 09:59
urrogates n-Triacontane-d62	103	50-150		%	1	08/09/13 09:59
Batch Information						
Analytical Batch: XFC11002 Analytical Method: AK103 Analyst: EAB Analytical Date/Time: 08/09/13 09:59 Container ID: 1133443008-A		P P P P	rep Batch: XX rep Method: S rep Date/Time rep Initial Wt./ rep Extract Vo	(X29545 6W3550C : 08/03/13 08:0 Vol.: 30.207 g l: 1 mL	00	

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Results of <b>BL05-3</b> Client Sample ID: <b>BL05-3</b>				Collectior	n Date: 07/30/	13 11:56	
Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443008 Lab Project ID: 1133443				Received Matrix: S Solids (%	Date: 07/31/ oil/Solid (dry v ): 64.8	13 09:48 veight)	
Results by Volatile Fuels							
<u>Parameter</u> Gasoline Range Organics	<u>Result</u> 2.52	<u>Qual</u> J	<u>LOQ/CL</u> 5.82	<u>DL</u> 1.75	<u>Units</u> mg/Kg	<u>DF</u> 1	Date Analyzed 08/05/13 20:09
u <b>rrogates</b> 4-Bromofluorobenzene	93.5		50-150		%	1	08/05/13 20:09
Batch Information Analytical Batch: VFC11551 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/05/13 20:09 Container ID: 1133443008-B			F F F F	Prep Batch: VX Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vc	(X25015 SW5035A e: 07/30/13 11:5 Vol.: 62.273 g ol: 46.9317 mL	56	
<u>Parameter</u> Benzene Ethylbenzene o-Xylene P & M -Xylene Toluene	Result 18.6 36.2 24.4 46.5 241	Qual U U J J	LOQ/CL 29.1 58.2 58.2 116 58.2	DL 9.31 18.1 18.1 34.9 18.1	<u>Units</u> ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg	DF 1 1 1 1 1	Date Analyzed 08/05/13 20:09 08/05/13 20:09 08/05/13 20:09 08/05/13 20:09 08/05/13 20:09
u <b>rrogates</b> 1,4-Difluorobenzene	92.5		72-119		%	1	08/05/13 20:09
Batch Information Analytical Batch: VFC11551 Analytical Method: SW8021B Analyst: ST Analytical Date/Time: 08/05/13 20:09 Container ID: 1133443008-B			F F F	Prep Batch: VX Prep Method: 3 Prep Date/Time Prep Initial Wt./ Prep Extract Vc	(X25015 SW5035A e: 07/30/13 11:5 Vol.: 62.273 g dl: 46.9317 mL	56	

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Results of MH01-1

Client Sample ID: **MH01-1** Client Project ID: **AVEC Selawik** Lab Sample ID: 1133443009 Lab Project ID: 1133443 Collection Date: 07/30/13 12:06 Received Date: 07/31/13 09:48 Matrix: Soil/Solid (dry weight) Solids (%): 69.9

## Results by Polynuclear Aromatics GC/MS

Parameter	Result Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	<u>DF</u>	Date Analyzed
1-Methylnaphthalene	17.6	7.11	2.13	ug/Kg	1	08/09/13 00:03
2-Methylnaphthalene	22.3	7.11	2.13	ug/Kg	1	08/09/13 00:03
Acenaphthene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Acenaphthylene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Anthracene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Benzo(a)Anthracene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Benzo[a]pyrene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Benzo[b]Fluoranthene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Benzo[g,h,i]perylene	4.97 J	7.11	2.13	ug/Kg	1	08/09/13 00:03
Benzo[k]fluoranthene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Chrysene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Dibenzo[a,h]anthracene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Fluoranthene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Fluorene	2.65 J	7.11	2.13	ug/Kg	1	08/09/13 00:03
Indeno[1,2,3-c,d] pyrene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Naphthalene	7.83	7.11	2.13	ug/Kg	1	08/09/13 00:03
Phenanthrene	3.03 J	7.11	2.13	ug/Kg	1	08/09/13 00:03
Pyrene	4.26 U	7.11	2.13	ug/Kg	1	08/09/13 00:03
Surrogates						
2-Fluorobiphenyl	99.5	45-105		%	1	08/09/13 00:03
Terphenyl-d14	96.3	30-125		%	1	08/09/13 00:03

### **Batch Information**

Analytical Batch: XMS7503 Analytical Method: 8270D SIMS (PAH) Analyst: RTS Analytical Date/Time: 08/09/13 00:03 Container ID: 1133443009-A Prep Batch: XXX29561 Prep Method: SW3550C Prep Date/Time: 08/04/13 22:15 Prep Initial Wt./Vol.: 22.631 g Prep Extract Vol: 1 mL

Print Date: 08/14/2013 9:31:55AM

<u>Qual</u> J	LOQ/CL 28.5	Solids (%) <u>DL</u>	: 69.9		
<u>Qual</u> J	LOQ/CL 28.5	DL			
<u>Qual</u> J	<u>LOQ/CL</u> 28.5	<u>DL</u>			
J	28.5		<u>Units</u>	<u>DF</u>	Date Analyzed
		8.85	mg/Kg	1	08/09/13 09:30
	50-150		%	1	08/09/13 09:30
			00545		
	F	rep Batch: XX.	X29545 W3550C		
	F	rep Date/Time:	08/03/13 08:0	0	
	P	rep Initial Wt./V	ol.: 30.061 g		
	P	rep Extract Vol	: 1 mL		
Qual	LOQ/CL	DL	<u>Units</u>	DF	Date Analyzed
	28.5	8.85	mg/Kg	1	08/09/13 09:30
	50-150		%	1	08/09/13 09:30
	P	rep Batch: XX	X29545		
	P	rep Method: S	W3550C		
	P	rep Date/Time:	08/03/13 08:0	0	
	F	rep Initial Wt./v	01.: 30.06 i g : 1 mL		
	Qual	Qual LOQ/CL 28.5 50-150	Qual       LOQ/CL       DL         28.5       8.85         50-150    Prep Batch: XXX Prep Method: S Prep Date/Time: Prep Initial Wt./V Prep Date/Time: Prep Initial Wt./V Prep Extract Vol	Prep Date/Time: 08/03/13 08:0         Prep Initial Wt./Vol.: 30.061 g         Prep Extract Vol: 1 mL         Qual       LOQ/CL       DL       Units         28.5       8.85       mg/Kg         50-150       %         Prep Batch: XXX29545         Prep Date/Time: 08/03/13 08:0         Prep Date/Time: 08/03/13 08:0         Prep Initial Wt./Vol.: 30.061 g         Prep Extract Vol: 1 mL	Prep Date/Time: 08/03/13 08:00         Prep Initial Wt./Vol.: 30.061 g         Prep Extract Vol: 1 mL         Qual       LOQ/CL       DL       Units       DE         28.5       8.85       mg/Kg       1         50-150       %       1         Prep Batch: XXX29545         Prep Date/Time: 08/03/13 08:00         Prep Initial Wt./Vol.: 30.061 g         Prep Extract Vol: 1 mL

SGS							
Results of MH01-1							
Client Sample ID: <b>MH01-1</b> Client Project ID: <b>AVEC Selawik</b> Lab Sample ID: 1133443009 Lab Project ID: 1133443				Collection Received Matrix: So Solids (%)	Date: 07/30 Date: 07/31/ bil/Solid (dry v : 69.9	/13 12:06 13 09:48 weight)	
-Results by TCLP Constituents Metals		<u> </u>		-		55	
Parameter	<u>Result</u> 0.0310	Qual	LOQ/CL 0.0500	<u>DL</u> 0.0155	<u>Units</u> ma/l	<u>DF</u> 25	Date Analyzed
Batch Information Analytical Batch: MMS8103 Analytical Method: SW6020 TCLP Analyst: NRB Analytical Date/Time: 08/03/13 03:05 Container ID: 1133443009-C			P P P P	rep Batch: MX rep Method: S rep Date/Time: rep Initial Wt./V rep Extract Vol	T4897 W3010A 08/02/13 11: ′ol.: 2.5 mL : 25 mL	50	

Results of MH01-1				Collection	Data: 07/20/	12 12:00	
Client Sample ID: MH01-1 Client Project ID: AVEC Selawik Lab Sample ID: 1133443009 Lab Project ID: 1133443				Collection Received Matrix: S Solids (%	Date: 07/30/ Date: 07/31/ oil/Solid (dry v ): 69.9	13 12:06 13 09:48 veight)	
Results by Volatile Fuels							
Parameter	Result	<u>Qual</u>	LOQ/CL	<u>DL</u>	<u>Units</u>	<u>DF</u>	Date Analyzed
Gasoline Range Organics	1.76	J	5.33	1.60	mg/Kg	1	08/05/13 12:42
urrogates							
4-Bromofluorobenzene	82.8		50-150		%	1	08/05/13 12:42
Batch Information							
Analytical Batch: VFC11551			F	rep Batch: VX	X25015		
Analytical Method: AK101			F	rep Method: S	5775035A	16	
Analytical Date/Time: 08/05/13 12:42			F	rep Initial Wt./	Vol.: 56.095 a		
Container ID: 1133443009-B			F	rep Extract Vo	l: 41.8566 mL		
Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Benzene	17.1	U	26.7	8.53	ug/Kg	1	08/05/13 12:42
Ethylbenzene	33.2	U	53.3	16.6	ug/Kg	1	08/05/13 12:42
o-Xylene	33.2	U	53.3	16.6	ug/Kg	1	08/05/13 12:42
P & M -Xylene	64.0	U	107	32.0	ug/Kg	1	08/05/13 12:42
Toluene	31.5	J	53.3	16.6	ug/Kg	1	08/05/13 12:42
urrogates 1,4-Difluorobenzene	94		72-119		%	1	08/05/13 12:42
Batch Information							
Analytical Batch: VEC11551			F	ren Batch: VX	(X25015		
Analytical Method: SW8021B			F	rep Method: S	SW5035A		
Analyst: ST			F	rep Date/Time	: 07/30/13 12:0	)6	
Analytical Date/Time: 08/05/13 12:42			F	rep Initial Wt./	Vol.: 56.095 g		
			F	rep Extract Vo	1: 41.8566 mL		



### Results of P15

Client Sample ID: **P15** Client Project ID: **AVEC Selawik** Lab Sample ID: 1133443010 Lab Project ID: 1133443 Collection Date: 07/30/13 09:18 Received Date: 07/31/13 09:48 Matrix: Soil/Solid (dry weight) Solids (%): 34.9

### Results by Polynuclear Aromatics GC/MS

Parameter	Posult (	Jual		וח	Linite	DE	Date Analyzed
<u>i arameter</u>	<u>itesuit</u> G	zuai			Onits		Date Analyzeu
1-Methylnaphthalene	298000		27100	8140	ug/Kg	500	08/08/13 23:34
2-Methylnaphthalene	344000		27100	8140	ug/Kg	500	08/08/13 23:34
Acenaphthene	6720		543	163	ug/Kg	10	08/08/13 01:54
Acenaphthylene	326	U	543	163	ug/Kg	10	08/08/13 01:54
Anthracene	326	U	543	163	ug/Kg	10	08/08/13 01:54
Benzo(a)Anthracene	181	J	543	163	ug/Kg	10	08/08/13 01:54
Benzo[a]pyrene	326	U	543	163	ug/Kg	10	08/08/13 01:54
Benzo[b]Fluoranthene	326	U	543	163	ug/Kg	10	08/08/13 01:54
Benzo[g,h,i]perylene	326	U	543	163	ug/Kg	10	08/08/13 01:54
Benzo[k]fluoranthene	326	U	543	163	ug/Kg	10	08/08/13 01:54
Chrysene	235	J	543	163	ug/Kg	10	08/08/13 01:54
Dibenzo[a,h]anthracene	326	U	543	163	ug/Kg	10	08/08/13 01:54
Fluoranthene	733		543	163	ug/Kg	10	08/08/13 01:54
Fluorene	10900		543	163	ug/Kg	10	08/08/13 01:54
Indeno[1,2,3-c,d] pyrene	326	U	543	163	ug/Kg	10	08/08/13 01:54
Naphthalene	164000		27100	8140	ug/Kg	500	08/08/13 23:34
Phenanthrene	4990		543	163	ug/Kg	10	08/08/13 01:54
Pyrene	719		543	163	ug/Kg	10	08/08/13 01:54
Surrogates							
2-Fluorobiphenyl	7000	*	45-105		%	10	08/08/13 01:54
Terphenyl-d14	106		30-125		%	10	08/08/13 01:54

### **Batch Information**

Analytical Batch: XMS7500 Analytical Method: 8270D SIMS (PAH) Analyst: RTS Analytical Date/Time: 08/08/13 01:54 Container ID: 1133443010-A

Analytical Batch: XMS7503 Analytical Method: 8270D SIMS (PAH) Analyst: RTS Analytical Date/Time: 08/08/13 23:34 Container ID: 1133443010-A Prep Batch: XXX29561 Prep Method: SW3550C Prep Date/Time: 08/04/13 22:15 Prep Initial Wt./Vol.: 22.549 g Prep Extract Vol: 3.8 mL

Prep Batch: XXX29561 Prep Method: SW3550C Prep Date/Time: 08/04/13 22:15 Prep Initial Wt./Vol.: 22.549 g Prep Extract Vol: 3.8 mL

Print Date: 08/14/2013 9:31:55AM

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Results of P15				Collection		12 00.40	
Client Sample ID: <b>P15</b> Client Project ID: <b>AVEC Selawik</b> .ab Sample ID: 1133443010 .ab Project ID: 1133443				Collection Received Matrix: So Solids (%)	Date: 07/30/ Date: 07/31/ <sup>2</sup> pil/Solid (dry w ): 34.9	13 09:18 13 09:48 veight)	
Results by Semivolatile Organic Fuel	S						
Parameter	<u>Result</u>	<u>Qual</u>	LOQ/CL	DL	<u>Units</u>	<u>DF</u>	Date Analyzed
Diesel Range Organics	152000		4580	1420	mg/Kg	20	08/09/13 10:49
irrogates							
a Androstane	0	*	50-150		%	20	08/09/13 10:49
Batch Information							
Analytical Batch: XFC11002 Analytical Method: AK102 Analyst: EAB Analytical Date/Time: 08/09/13 10:49 Container ID: 1133443010-A				Prep Batch: XX Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	X29545 W3550C : 08/03/13 08:0 /ol.: 30.021 g l: 4 mL	00	
Parameter	<u>Result</u>	Qual	LOQ/CL	<u>DL</u>	<u>Units</u>	<u>DF</u>	Date Analyzed
Residual Range Organics	11400		4580	1420	mg/Kg	20	08/09/13 10:49
irrogates							
I-Triacontane-d62	0	*	50-150		%	20	08/09/13 10:49
Batch Information							
Analytical Batch: XFC11002 Analytical Method: AK103 Analyst: EAB Analytical Date/Time: 08/09/13 10:49 Container ID: 1133443010-A				Prep Batch: XX Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	X29545 6W3550C : 08/03/13 08:0 /ol.: 30.021 g l: 4 mL	00	

tesults of P15							
Client Sample ID: <b>P15</b>			Collection	Date: 07/30	/13 09:18		
Client Project ID: AVEC Selawik			Received [	Date: 07/31/	13 09:48		
Lab Sample ID: 1133443010			Matrix: So Solids (%)	11/Solid (dry ' 34 9	weight)		
Results by TCLP Constituents Metals	;						
Results by TCLP Constituents Metals	<b>Result</b> Qual	LOQ/CL	DL	<u>Units</u>	<u>DF</u>	Date Analyzed	
Results by TCLP Constituents Metals Parameter Lead	<u>Result</u> <u>Qual</u> 0.0310 U	LOQ/CL 0.0500	<u>DL</u> 0.0155	<u>Units</u> mg/L	<u>DF</u> 25	<u>Date Analyzed</u> 08/03/13 03:08	
Results by TCLP Constituents Metals Parameter Lead Batch Information	Result Qual 0.0310 U	<u>LOQ/CL</u> 0.0500	<u>DL</u> 0.0155	<u>Units</u> mg/L	<u>DF</u> 25	<u>Date Analyzed</u> 08/03/13 03:08	
Results by TCLP Constituents Metals Parameter Lead Batch Information Analytical Batch: MMS8103	Result Qual 0.0310 U	LOQ/CL 0.0500	<u>DL</u> 0.0155 rep Batch: MX	<u>Units</u> mg/L 14897	<u>DF</u> 25	<u>Date Analyzed</u> 08/03/13 03:08	
Results by TCLP Constituents Metals Parameter Lead Batch Information Analytical Batch: MMS8103 Analytical Method: SW6020 TCLP	Result Qual 0.0310 U	LOQ/CL 0.0500	DL 0.0155 rep Batch: MX rep Method: SV	<u>Units</u> mg/L 14897 N3010A	<u>DF</u> 25	<u>Date Analyzed</u> 08/03/13 03:08	
Results by TCLP Constituents Metals Parameter Lead Batch Information Analytical Batch: MMS8103 Analytical Method: SW6020 TCLP Analyst: NRB Analyst: NRB	Result Qual 0.0310 U	LOQ/CL 0.0500	DL 0.0155 rep Batch: MX rep Method: SV rep Date/Time:	<u>Units</u> mg/L F4897 N3010A 08/02/13 11:	<u>DF</u> 25 50	<u>Date Analyzed</u> 08/03/13 03:08	
Results by <b>Volatile Fuels</b>				<b>(</b>	). 34.9		
--	--	------------------	---	--	--	----------------------------------	---
<u><sup>2</sup>arameter</u> Gasoline Range Organics	<u>Result</u> 534	<u>Qual</u>	<u>LOQ/CL</u> 34.1	<u>DL</u> 10.2	<u>Units</u> mg/Kg	<u>DF</u> 2	Date Analyzed 08/07/13 22:06
<b>irrogates</b> I-Bromofluorobenzene	817	*	50-150		%	2	08/07/13 22:06
Satch Information Analytical Batch: VFC11555 Analytical Method: AK101 Analyst: ST Analytical Date/Time: 08/07/13 22:06 Container ID: 1133443010-B				Prep Batch: VX Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	(X25028 SW5035A :: 07/30/13 09:1 Vol.: 46.091 g I: 54.9881 mL	8	
<u>Parameter</u> Benzene Ethylbenzene D-Xylene P & M -Xylene Foluene	<u>Result</u> 64.9 1440 12400 10400 586	<u>Qual</u> J	LOQ/CL 171 341 341 683 341	<u>DL</u> 54.6 107 107 205 107	<u>Units</u> ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg	DF 2 2 2 2 2 2	Date Analyzed 08/07/13 22:06 08/07/13 22:06 08/07/13 22:06 08/07/13 22:06 08/07/13 22:06
I <b>rrogates</b> I,4-Difluorobenzene	95.5		72-119		%	2	08/07/13 22:06
Batch Information							
Analytical Batch: VFC11555 Analytical Method: SW8021B Analyst: ST Analytical Date/Time: 08/07/13 22:06 Container ID: 1133443010-B				Prep Batch: VX Prep Method: S Prep Date/Time Prep Initial Wt./ Prep Extract Vo	(X25028 SW5035A :: 07/30/13 09:1 Vol.: 46.091 g II: 54.9881 mL	8	

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Client Sample ID: Trip Blank				Collection	Date: 07/30/	13 09:18	
Client Project ID: <b>AVEC Selawik</b> _ab Sample ID: 1133443011 _ab Project ID: 1133443				Received Matrix: So Solids (%)	Date: 07/31/ olid/Soil (Wet ):	13 09:48 Weight)	
Results by Volatile Fuels							
Parameter	<u>Result</u>	<u>Qual</u>	LOQ/CL	<u>DL</u>	<u>Units</u>	DF	Date Analyzed
Gasoline Range Organics	0.764	J	2.48	0.745	mg/Kg	1	08/05/13 14:51
urrogates							
1-Bromofluorobenzene	97.3		50-150		%	1	08/05/13 14:51
Batch Information							
Analytical Batch: VFC11551			F	Prep Batch: VX	X25015		
Analytical Method: AK101			F	Prep Method: S	W5035A	19	
Analytical Date/Time: 08/05/13 14:51			F	Prep Initial Wt./	/ol.: 50.339 g	10	
Container ID: 1133443011-A			F	Prep Extract Vo	l: 25 mL		
Parameter	Result	Qual	LOQ/CL	DL	Units	DE	Date Analyzed
Benzene	7.94	U	12.4	3.97	ug/Kg	1	08/05/13 14:51
Ethylbenzene	15.5	U	24.8	7.75	ug/Kg	1	08/05/13 14:51
D-Xylene	15.5 20.8	U	24.8 49.7	7.75 14 0	ug/Kg	1	08/05/13 14:51
Foluene	15.5	U	24.8	7.75	ug/Kg	1	08/05/13 14:51
urrogates							
1,4-Difluorobenzene	92.4		72-119		%	1	08/05/13 14:51
Batch Information							
Analytical Batch: VFC11551			F	Prep Batch: VX	X25015		
Analytical Method: SW8021B			F	Prep Method: S	W5035A • 07/30/13 09··	18	
Analytical Date/Time: 08/05/13 14:51			F	Prep Initial Wt./	/ol.: 50.339 g	10	
			F	rep Extract Vol	l: 25 mL		

Print Date: 08/14/2013 9:31:55AM

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Method Blank					
Blank ID: MB for HBI Blank Lab ID: 116456	N 1469007 [MXT/4897] 58	Matrix	: Water (Surfac	e, Eff., Ground)	
QC for Samples: 1133443001, 11334430	003, 1133443007, 1133443009, 113	3443010			
Results by SW6020	ſĊĹ₽				
<u>Parameter</u> Lead	<u>Results</u> 0.000620U	<u>LOQ/CL</u> 0.00100	<u>DL</u> 0.000310	<u>Units</u> mg/L	
Batch Information	<u> </u>				
Analytical Batch: M Analytical Method: Instrument: Perkin Analyst: NRB Analytical Date/Time		Prep Ba Prep Me Prep Da Prep Init Prep Ex	tch: MXT4897 thod: SW3010A te/Time: 8/2/2013 ial Wt./Vol.: 25 m tract Vol: 25 mL	3 11:50:00AM nL	

Bank Spike Lib: Lic: Stor HBN 1133443 (MXT4897):         Bank Spike Lib: 100: 102: 6003/2013 02:30         Batk Analyzetti 08:03/2013 02:31         Batk Spike Lib: 113443001, 1133443007, 113443007, 113443007, 113443007, 113443007, 11304, Exat Cibert Cibe	Blank Spike Summary				
Cord Sampier 133443001, 1133443003, 1133443001, 1133443001, 113344301 <b>Performance Performance Diark Splice (mg/L) Performance Diark Splice (mg/L) Cath Information Diark Splice (mg/L)</b> <th>Blank Spike ID: LCS for HE Blank Spike Lab ID: 11645 Date Analyzed: 08/03/201</th> <th>BN 1133443 [MXT 69 3 02:43</th> <th>4897]</th> <th>Matrix: Water (Surface, Eff., Ground)</th> <th></th>	Blank Spike ID: LCS for HE Blank Spike Lab ID: 11645 Date Analyzed: 08/03/201	BN 1133443 [MXT 69 3 02:43	4897]	Matrix: Water (Surface, Eff., Ground)	
<section-header><text>  Results by SW6020 TCLP     Bank     Bank Run     Res              Res  <th>QC for Samples: 113344</th><th>13001, 1133443003</th><th>, 1133443007, 113</th><th>3443009, 1133443010</th><th></th></text></section-header>	QC for Samples: 113344	13001, 1133443003	, 1133443007, 113	3443009, 1133443010	
Bink Spike (mg/L)					
Bank Spike (mg/L)         Bank Spike (mg/L)         Bank Spike (mg/L)         Led       1       1.05       105       CL         Led       1       1.05       105       (80-120)         Stath Information       Analytical Bath: MMS103       Prep Bath: MXT4897       Prep Bath: MXT4897         Analytical Bath: MRB       Bath Information       Prep Bath: MXT4897       Prep Bath: MXT4897         Analytical Path: MRB       Bath Information       Prep Bath: MXT4897       Prep Bath: MXT4897         Analytical Bath: MRB       Bath Information       Prep Bath: MXT4897       Prep Bath: MXT4897         Analytical Bath: MRB       Bath Information       Prep Bath: MXT4897       Prep Bath: MXT4897         Analysis: MRB       Bath Information       Prep Bath: MXT4897       Prep Bath: MXT4897         Marking: MRB       Bath Information       Prep Bath: MXT4897       Prep Bath: MXT4897         Marking: MRB       Bath Information       Prep Bath: MXT4897       Prep Bath: MXT4897         Marking: MRB       Bath Information       Prep Bath: MXT4897       Prep Bath: MXT4897         Marking: MRB       Bath Information       Drep Information       Drep Information         Marking: MRB       Bath Information       Drep Information       Drep Information	Results by SW6020 TCLP	Diant			
eed       1       1.05       105       (80-120)         Stack Information         Analytical Batch:       XMS8103       Prep Batch:       MXT4897         Analytical Batch:       XMS020 TCLP       Prep Batch:       XM200103       T:mon         Analytical Match:       XMS020 TCLP       Prep Batch:       XM200103       T:mon       Dialogital Batch:	Parameter	Spike Re	Spike (mg/L)	CL	
Batch Information         Analytical Batri: KMSB103         Strummer: Perkin Elimer Sciex (CP-MS P3 2)         Analytical Matrix: NRB    Provide Information Provide Information Control Provide Information Provide Informatio Informatio Informatio Information Provide Information	ead	1 1.0	05 105	(80-120)	
Analytical Batch: MWSB103 Analytical Method: SW6020 TCLP Instrument: Perkin Elmer Sciex ICP-MS P3 Analyst: NRB Prep Batch: MXT4997 Prep Method: SW3010A Prep Date/Time: 80022013 11:50 Spike Init Wt.Vol.: 1 mg1_Extract Vol: 25 mL Dupe Init Wt.Vol.: Extract Vol: Prep Method: SW3010A Prep Date/Time: 80022013 11:50 Spike Init Wt.Vol.: 1 mg1_Extract Vol: 25 mL Dupe Init Wt.Vol.: Extract Vol: Prep Method: SW3010A Prep Date/Time: 80022013 11:50 Spike Init Wt.Vol.: 1 mg1_Extract Vol: 25 mL Dupe Init Wt.Vol.: 1 mg1_Extract Vol: Prep Method: SW3010A Prep Date/Time: 80022013 11:50 Spike Init Wt.Vol.: 1 mg1_Extract Vol: 25 mL Dupe Init Wt.Vol.: 1 mg1_Extract Vol: Prep Method: SW3010A Prep Date/Time: 80022013 11:50 Spike Init Wt.Vol.: 1 mg1_Extract Vol: Prep Method: SW3010A Prep Date/Time: 80022013 11:50 Spike Init Wt.Vol.: 1 mg1_Extract Vol: Prep Method: SW3010A Prep Date/Time: 80022013 11:50 Spike Init Wt.Vol.: 1 mg1_Extract Vol: Prep Method: SW3010A Prep Date/Time: 80022013 11:50 Spike Init Wt.Vol.: 1 mg1_Extract Vol: 25 mL Dupe Init Wt.Vol.: 1 mg1_Extract Vol: Prep Method: SW3010A Prep Date/Time: 80022013 11:50 Spike Init Wt.Vol.: 1 mg1_Extract Vol: 25 mL Dupe Init Wt.Vol.: 1 mg1_Extract Vol: Prep Method: SW3010A Prep Date/Time: 80022013 11:50 Spike Init Wt.Vol.: 1 mg1_Extract Vol: 25 mL Dupe Init Wt.Vol.: 1 mg1_Extract Vol: 1 mg1_E	Batch Information				
nt Date: 108/14/2013 19:31:594M	Analytical Batch: MMS8103 Analytical Method: SW6020 Instrument: Perkin Elmer S Analyst: NRB	TCLP ciex ICP-MS P3		Prep Batch: <b>MXT4897</b> Prep Method: <b>SW3010A</b> Prep Date/Time: <b>08/02/2013 11:50</b> Spike Init Wt./Vol.: 1 mg/L Extract Vol: 25 ml Dupe Init Wt./Vol.: Extract Vol:	-
It Date: 08/14/2013 9:31:59AM					
It Date: 08/14/2013 9:31:59AM					
it Date: 08/14/2013 9:31:59AM					
11 Date: 08/14/2013 9:31:59AM					
It Date: 08/14/2013 9:31:59AM					
It Date: 08/14/2013 9:31:59AM 200 West Potter Drive Anchorage, AK 95518					
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at Date: 08/14/2013 9:31:59AM 200 West Potter Drive Anchorage, AK 95518					
200 West Potter Drive Anchorage, AK 95518	nt Date: 08/14/2013 9:31:59AM				
	SGS North Americ	a Inc.	t Potter Drive Anch	orage, AK 95518	

Original Sample ID: 1133443001 MS Sample ID: 1164570 MS MSD Sample ID: 1164571 MSD QC for Samples: 1133443001, 1133443003, 1133 Results by SW6020 TCLP M Parameter Sample Spike Lead 0.0303J 20.9 Batch Information	9443007, 113 Matrix Spike <u>Result</u> 22.6	33443009, 1 (mg/L) <u>Rec (%)</u> 108	Analysis Analysis Analysis Matrix: 3 133443010 Spike	Date: 08 Date: 08 Date: 08 Soil/Solid	3/03/2013 3/03/2013 3/03/2013 (dry weigł (dry weigł (mg/L) <u>Rec (%)</u>	2:45 2:48 2:50 ht)	<u>RPD (%)</u>	RPD CL
Results by SW6020 TCLP V Parameter Sample Spike Lead 0.0303J 20.9 Batch Information Analytical Batch: MMS8103	Matrix Spike Result 22.6	(mg/L) <u>Rec (%)</u> 108	Spike	e Duplicate	e (mg/L) <u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Parameter     Sample     Spike       Lead     0.0303J     20.9       Batch Information       Analytical Batch: MMS8103	Matrix Spike Result 22.6	(mg/L) <u>Rec (%)</u> 108	Spike	e Duplicate	e (mg/L) <u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Parameter     Sample     Spike       Lead     0.0303J     20.9       Batch Information     Analytical Batch: MMS8103	<u>Result</u> 22.6	<u>Rec (%)</u> 108	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Batch Information			20.9	22.8	109	80-120	1.03	(< 30)
Analytical Batch: MMS8103								
Analytical Method: SW6020 TCLP Instrument: Perkin Elmer Sciex ICP-MS P3 Analyst: NRB Analytical Date/Time: 8/3/2013 2:48:06AM		Prep Batch: MXT4897 Prep Method: Waters Digest for Metals by ICP-MS(TCLP) Prep Date/Time: 8/2/2013 11:50:00AM Prep Initial Wt./Vol.: 2.50mL Prep Extract Vol: 25.00mL						))

Print Date: 08/14/2013 9:32:00AM

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Method Blank						
Blank ID: MB for H Blank Lab ID: 116	IBN 1468961 [SPT/9098] 4323	Matrix: Soil/Solid (dry weight)				
QC for Samples: 1133443001, 11334	43002, 1133443003, 1133443004, 1133	3443005, 1133443006				
Results by SM21 2	2540G					
<u>Parameter</u> Total Solids	<u>Results</u> 100	LOQ/CL	<u>DL</u>	<u>Units</u> %		
Batch Information						
Analytical Batch: Analytical Method Instrument: Analyst: KRL Analytical Date/T	SPT9098 d: SM21 2540G ime: 8/1/2013 6:35:00PM					

Print Date: 08/14/2013 9:32:01AM

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	1. 2010 a 21 area		_			
	Duplicate Sample Summary					
	Original Sample ID: 113338501	11	Anal	ysis Date: 08	8/01/2013 18:35	
	Duplicate Sample ID: 1164325		Matr	ix: Soil/Solid	(dry weight)	
	QC for Samples:					
	1133443001, 1133443002, 113344	3003, 1133443004, 113	3443005, 1133443006			
	Results by SM21 2540G					$\prec$
	NAME	<u>Original</u>	<u>Duplicate</u>	<u>RPD (%)</u>	RPD CL	
	Total Solids	85.7	85.7	0.06	15.00	
	Batch Information					
	Analytical Batch: SPT9098 Analytical Method: SM21 2540G Instrument: Analyst: KRL	i				
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Method Blank							
Blank ID: MB for HBN Blank Lab ID: 1164598	Blank ID: MB for HBN 1469013 [SPT/9099] Blank Lab ID: 1164598		Matrix: Soil/Solid (dry weight)				
QC for Samples: 1133443007, 113344300	8, 1133443009, 1133443010						
Results by SM21 2540	G	1					
Decemeter	Depulto	1.00/01		Linita			
Total Solids	100			%			
Batch Information							
Analytical Batch: SPT Analytical Method: SI Instrument: Analyst: KRL Analytical Date/Time:	r9099 M21 2540G 8/2/2013 6:30:00PM						

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Duplicate Sample Su	mmary				
Original Sample ID: 1 <sup>7</sup> Duplicate Sample ID: QC for Samples: 1133443007, 113344300	133480001 1164599 8, 1133443009, 1133443010		Analysis Date: 0 Matrix: Soil/Solid	98/02/2013 18:30 d (dry weight)	
Results by SM21 2540	G	<u> </u>			
NAME	<u>Original</u>	Duplicate	<u>RPD (%)</u>	RPD CL	
Total Solids	56.9	57.6	1.10	15.00	
Batch Information Analytical Batch: SPTS Analytical Method: SM Instrument: Analyst: KRL	9099 21 2540G				

Print Date: 08/14/2013 9:32:03AM

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Method Blank					
Blank ID: MB for HBN 1469 Blank Lab ID: 1165610	489 [VXX/25015]	Matrix	k: Soil/Solid (d	ry weight)	
QC for Samples: 1133443007, 1133443008, 11	33443009, 1133443011				
Results by AK101					
Parameter	Results	LOQ/CL	<u>DL</u>	<u>Units</u>	
Gasoline Range Organics	0.843J	2.50	0.750	mg/Kg	
Surrogates					
4-Bromofluorobenzene	92.2	50-150		%	
Batch Information					
Analytical Batch: VFC115	51	Prep Ba	tch: VXX25015	5	
Analytical Method: AK101		Prep Me	ethod: SW5035	A	
Instrument: Agilent 7890A	PID/FID	Prep Da	ite/Time: 8/5/20	013 8:00:00AM	
Analyst: ST	012 11·10·00AM	Prep Init Prep Ex	tial Wt./Vol.: 50	g	
Analytical Date/Time. 0/5/2	2013 11.10.00AW	Piep Ex	uau vul. 20 m	L	

Print Date: 08/14/2013 9:32:04AM



Blank Spike ID: LCS for HBN 1133443 [VXX25015] Blank Spike Lab ID: 1165613 Date Analyzed: 08/05/2013 12:05 Spike Duplicate ID: LCSD for HBN 1133443 [VXX25015] Spike Duplicate Lab ID: 1165614 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443007, 1133443008, 1133443009, 1133443011

Results by AK101									
	E	Blank Spike	(mg/Kg)	S	pike Duplic	ate (mg/Kg)			
Parameter	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Gasoline Range Organics	10.0	9.93	99	10.0	10.1	101	(60-120)	2.10	(< 20 )
urrogates									
4-Bromofluorobenzene			95	1.25	97.7	98	(50-150)	2.50	
Batch Information									
Analytical Batch: VFC11551				Pre	p Batch: V	XX25015			
Analytical Method: AK101				Pre	p Method:	SW5035A			
Instrument: Agilent 7890A F	PID/FID			Pre	p Date/Tim	ie: 08/05/201	3 08:00		
Analyst: ST				Spi	ke Init Wt./\	Vol.: 10.0 m	g/Kg Extract	t Vol: 25 mL	
				Du	be Init Wt./\	/ol.: 10.0 mg	g/Kg Extract	Vol: 25 mL	

Print Date: 08/14/2013 9:32:05AM

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# Method Blank

Blank ID: MB for HBN 1469489 [VXX/25015] Blank Lab ID: 1165610 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443007, 1133443008, 1133443009, 1133443011

Results by SW8021B					
Parameter	Results	LOQ/CL	<u>DL</u>	<u>Units</u>	
Benzene	8.00U	12.5	4.00	ug/Kg	
Ethylbenzene	15.6U	25.0	7.80	ug/Kg	
o-Xylene	15.6U	25.0	7.80	ug/Kg	
P & M -Xylene	30.0U	50.0	15.0	ug/Kg	
Toluene	8.50J	25.0	7.80	ug/Kg	
Surrogates					
1,4-Difluorobenzene	93.5	72-119		%	

### **Batch Information**

Analytical Batch: VFC11551 Analytical Method: SW8021B Instrument: Agilent 7890A PID/FID Analyst: ST Analytical Date/Time: 8/5/2013 11:10:00AM Prep Batch: VXX25015 Prep Method: SW5035A Prep Date/Time: 8/5/2013 8:00:00AM Prep Initial Wt./Vol.: 50 g Prep Extract Vol: 25 mL

Print Date: 08/14/2013 9:32:06AM



Blank Spike ID: LCS for HBN 1133443 [VXX25015] Blank Spike Lab ID: 1165611 Date Analyzed: 08/05/2013 11:28 Spike Duplicate ID: LCSD for HBN 1133443 [VXX25015] Spike Duplicate Lab ID: 1165612 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443007, 1133443008, 1133443009, 1133443011

Results by SW8021B									
	E	Blank Spike	(ug/Kg)	S	Spike Duplic	ate (ug/Kg)			
Parameter	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>Spike</u>	<u>Result</u>	<u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Benzene	1250	1300	104	1250	1140	92	(75-125)	12.80	(< 20)
Ethylbenzene	1250	1350	108	1250	1260	101	(75-125)	6.50	(< 20)
o-Xylene	1250	1350	108	1250	1260	101	(75-125)	7.10	(< 20)
P & M -Xylene	2500	2740	109	2500	2550	102	(80-125)	6.90	(< 20)
Toluene	1250	1340	107	1250	1270	102	(70-125)	5.40	(< 20)
Surrogates									
1,4-Difluorobenzene			98	1250	93.2	93	(72-119)	4.70	
Batch Information									

Analytical Batch: VFC11551 Analytical Method: SW8021B Instrument: Agilent 7890A PID/FID Analyst: ST Prep Batch: VXX25015 Prep Method: SW5035A Prep Date/Time: 08/05/2013 08:00 Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Print Date: 08/14/2013 9:32:07AM



#### Matrix Spike Summary

Original Sample ID: 1133443009 MS Sample ID: 1165615 MS MSD Sample ID: 1165616 MSD Analysis Date: 08/05/2013 12:42 Analysis Date: 08/05/2013 13:00 Analysis Date: 08/05/2013 13:19 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443007, 1133443008, 1133443009, 1133443011

Results by SW8021B										
		Mat	trix Spike (ι	ug/Kg)	Spike	e Duplicate	(ug/Kg)			
Parameter	Sample	Spike	Result	<u>Rec (%)</u>	Spike	Result	<u>Rec (%)</u>	CL	<u>RPD (%)</u>	RPD CL
Benzene	17.1U	1588	1445	91	1588	1488	94	75-125	3.20	(< 20)
Ethylbenzene	33.2U	1588	1588	100	1588	1674	105	75-125	5.00	(< 20)
o-Xylene	33.2U	1588	1574	99	1588	1660	104	75-125	5.00	(< 20)
P & M -Xylene	64.0U	3190	3205	101	3190	3376	106	80-125	4.90	(< 20)
Toluene	31.5J	1588	1602	99	1588	1688	104	70-125	4.90	(< 20)
Surrogates										
1,4-Difluorobenzene		1588	1516	95	1588	1502	94	72-119	0.80	
Potob Information										

Analytical Batch: VFC11551 Analytical Method: SW8021B Instrument: Agilent 7890A PID/FID Analyst: ST Analytical Date/Time: 8/5/2013 1:00:00PM Prep Batch: VXX25015 Prep Method: AK101 Extraction (S) Prep Date/Time: 8/5/2013 8:00:00AM Prep Initial Wt./Vol.: 56.10g Prep Extract Vol: 25.00mL

Print Date: 08/14/2013 9:32:07AM

25023]	Matrix	Soil/Solid (dr		
-	matha		y weight)	
ts	LOQ/CL	DL	<u>Units</u>	
	2.50	0.750	mg/Kg	
	50-150		%	
	Prep Bat	ch: VXX25023		
	Prep Met	hod: SW5035A	10.000.00414	
	Prep Dat Prep Initi	e/Time: 8/6/20 al W/t /V/ol : 50 (	13 8:00:00AM	
:00PM	Prep Exti	act Vol: 25 mL	9	
	t <u>s</u>	ts LOQ/CL 2.50 50-150 Prep Bate Prep Date Prep Date Prep Initia	ts <u>LOQ/CL DL</u> 2.50 0.750 50-150 Prep Batch: VXX25023 Prep Method: SW5035A Prep Date/Time: 8/6/20' Prep Initial Wt./Vol.: 50 ep Prep Extract Vol.: 25 ml	ts         LOQ/CL         DL         Units           2.50         0.750         mg/Kg           50-150         %

Print Date: 08/14/2013 9:32:08AM



Blank	Spike	Summary
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Blank Spike ID: LCS for HBN 1133443 [VXX25023] Blank Spike Lab ID: 1166026 Date Analyzed: 08/06/2013 23:58 Spike Duplicate ID: LCSD for HBN 1133443 [VXX25023] Spike Duplicate Lab ID: 1166027 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443004

Results by AK101			_						
	E	Blank Spike	(mg/Kg)	S	pike Duplic	ate (mg/Kg)			
<u>Parameter</u>	Spike	Result	<u>Rec (%)</u>	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Gasoline Range Organics	10.0	10.3	103	10.0	10.2	102	(60-120)	1.30	(< 20)
Surrogates									
4-Bromofluorobenzene			85	1.25	86.3	86	(50-150)	1.40	
Batch Information									
Analytical Batch: VFC11554				Pre	p Batch: V	XX25023			
Analytical Method: AK101				Pre	p Method:	SW5035A			
Instrument: Agilent 7890 PID/FI	D			Pre	p Date/Tim	e: 08/06/201	3 08:00		
Analyst: ST				Spi	ke Init Wt./\	Vol.: 10.0 m	g/Kg Extrac	t Vol: 25 mL	
				Du	be Init Wt./\	/ol.: 10.0 mg	g/Kg Extract	Vol: 25 mL	

Print Date: 08/14/2013 9:32:09AM

# SGS

# Method Blank

Blank ID: MB for HBN 1469581 [VXX/25023] Blank Lab ID: 1166023

QC for Samples: 1133443004

#### Results by SW8021B

Parameter	<u>Results</u>	LOQ/CL	<u>DL</u>	<u>Units</u>
Benzene	8.00U	12.5	4.00	ug/Kg
Ethylbenzene	15.6U	25.0	7.80	ug/Kg
o-Xylene	15.6U	25.0	7.80	ug/Kg
P & M -Xylene	30.0U	50.0	15.0	ug/Kg
Toluene	15.6U	25.0	7.80	ug/Kg
Surrogates				
1,4-Difluorobenzene	94.8	72-119		%

#### **Batch Information**

Analytical Batch: VFC11554 Analytical Method: SW8021B Instrument: Agilent 7890 PID/FID Analyst: ST Analytical Date/Time: 8/6/2013 11:02:00PM Prep Batch: VXX25023 Prep Method: SW5035A Prep Date/Time: 8/6/2013 8:00:00AM Prep Initial Wt./Vol.: 50 g Prep Extract Vol: 25 mL

Matrix: Soil/Solid (dry weight)

Print Date: 08/14/2013 9:32:09AM



Blank Spike ID: LCS for HBN 1133443 [VXX25023] Blank Spike Lab ID: 1166024 Date Analyzed: 08/06/2013 23:21 Spike Duplicate ID: LCSD for HBN 1133443 [VXX25023] Spike Duplicate Lab ID: 1166025 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443004

Results by SW8021B			_						
	E	Blank Spike	(ug/Kg)	Spike Duplicate (ug/Kg)			1		
<u>Parameter</u>	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Benzene	1250	1230	98	1250	1230	98	(75-125)	0.10	(< 20)
Ethylbenzene	1250	1300	104	1250	1300	104	(75-125)	0.19	(< 20)
o-Xylene	1250	1300	104	1250	1310	105	(75-125)	0.69	(< 20)
P & M -Xylene	2500	2630	105	2500	2640	106	(80-125)	0.47	(< 20)
Toluene	1250	1290	103	1250	1290	103	(70-125)	0.19	(< 20)
Surrogates									
1,4-Difluorobenzene			99	1250	98.6	99	(72-119)	0.10	
Batch Information									
Analytical Batch: VFC11554	Prep Batch: VXX25023								

Analytical Batch: VFC11554 Analytical Method: SW8021B Instrument: Agilent 7890 PID/FID Analyst: ST Prep Batch: VXX25023 Prep Method: SW5035A Prep Date/Time: 08/06/2013 08:00 Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Print Date: 08/14/2013 9:32:10AM



# Matrix Spike Summary

Original Sample ID: 1133500005 MS Sample ID: 1166028 MS MSD Sample ID: 1166029 MSD 
 Analysis Date:
 08/07/2013
 0:35

 Analysis Date:
 08/07/2013
 0:54

 Analysis Date:
 08/07/2013
 1:12

 Matrix:
 Soil/Solid (dry weight)
 1:12

QC for Samples: 1133443004

Results by SW8021B										
		Mat	trix Spike (u	Spike (ug/Kg)		Spike Duplicate (ug/Kg)				
Parameter	Sample	Spike	Result	<u>Rec (%)</u>	Spike	Result	<u>Rec (%)</u>	CL	<u>RPD (%)</u>	RPD CL
Benzene	9.90U	1243	1243	100	1243	1221	98	75-125	1.60	(< 20)
Ethylbenzene	19.3U	1243	1299	104	1243	1288	104	75-125	0.48	(< 20)
o-Xylene	19.3U	1243	1321	106	1243	1310	106	75-125	0.72	(< 20)
P & M -Xylene	37.0U	2486	2654	107	2486	2632	106	80-125	0.87	(< 20)
Toluene	19.3U	1243	1299	105	1243	1288	103	70-125	1.30	(< 20)
Surrogates										
1,4-Difluorobenzene		1243	1232	99	1243	1232	99	72-119	0.28	
Batch Information										
Analytical Batch: VFC11		Prep	Batch: \	/XX25023						

Analytical Method: SW8021B Instrument: Agilent 7890 PID/FID Analyst: ST Analytical Date/Time: 8/7/2013 12:54:00AM Prep Batch: VXX25023 Prep Method: AK101 Extraction (S) Prep Date/Time: 8/6/2013 8:00:00AM Prep Initial Wt./Vol.: 56.21g Prep Extract Vol: 25.00mL

Print Date: 08/14/2013 9:32:11AM

# SGS

Method Blank										
Blank ID: MB for HBN 1469 Blank Lab ID: 1166278	667 [VXX/25028]	Matrix	c: Soil/Solid (d	ry weight)						
QC for Samples: 1133443001, 1133443002, 11	33443003, 1133443005, 113	3443006, 1133443010	I							
Results by AK101										
Parameter	<u>Results</u>	LOQ/CL	<u>DL</u>	<u>Units</u>						
Gasoline Range Organics	0.757J	2.50	0.750	mg/Kg						
Surrogates										
4-Bromofluorobenzene	82.8	50-150		%						
Batch Information										
Analytical Batch: VFC1155	55	Prep Ba	tch: VXX25028							
Analytical Method: AK101		Prep Me	ethod: SW5035	A						
	Instrument: Agilent 7890 PID/FID			Prep Date/Time: 8/7/2013 8:00:00AM						
Instrument: Agilent 7890 P	PID/FID	Prep Da Dran Init	te/Time: 8/7/20	013 0.00.00AlVI						

Print Date: 08/14/2013 9:32:11AM

SGS	

Blank Spike Summary	
Blank Spike ID: LCS for HBN 1133443 [VXX25028] Blank Spike Lab ID: 1166281 Date Analyzed: 08/07/2013 11:49	Spike Duplicate ID: LCSD for HBN 1133443 [VXX25028] Spike Duplicate Lab ID: 1166282 Matrix: Soil/Solid (dry weight)
QC for Samples: 1133443001, 1133443002, 1133443	3003, 1133443005, 1133443006, 1133443010
Results by AK101	1

	E	Blank Spike	(mg/Kg)	Spike Duplicate (mg/Kg)							
<u>Parameter</u>	Spike	Result	<u>Rec (%)</u>	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL		
Gasoline Range Organics	10.0	10.4	104	10.0	11.1	111	(60-120)	6.60	(< 20)		
Surrogates											
4-Bromofluorobenzene			88	1.25	86.8	87	(50-150)	1.60			
Batch Information											
Analytical Batch: VFC11555				Prep Batch: VXX25028							
Analytical Method: AK101				Prep Method: SW5035A							
Instrument: Agilent 7890 PID/F		Prep Date/Time: 08/07/2013 08:00									
Analyst: ST				Spi	ke Init Wt./\	Vol.: 10.0 m	g/Kg Extrac	t Vol: 25 mL			
				Dup	be Init Wt./\	/ol.: 10.0 mg	g/Kg Extract	Vol: 25 mL			

Print Date: 08/14/2013 9:32:12AM

# SGS

# Method Blank

Blank ID: MB for HBN 1469667 [VXX/25028] Blank Lab ID: 1166278 Matrix: Soil/Solid (dry weight)

QC for Samples:

1133443001, 1133443002, 1133443003, 1133443005, 1133443006, 1133443010

Results by SW8021B					
Parameter	Results	LOQ/CL	<u>DL</u>	<u>Units</u>	
Benzene	8.00U	12.5	4.00	ug/Kg	
Ethylbenzene	15.6U	25.0	7.80	ug/Kg	
o-Xylene	15.6U	25.0	7.80	ug/Kg	
P & M -Xylene	30.0U	50.0	15.0	ug/Kg	
Toluene	15.6U	25.0	7.80	ug/Kg	
Surrogates					
1,4-Difluorobenzene	95.8	72-119		%	
Batch Information					
Analytical Batch: VEC11555		Pren Ba	tch: VXX25028		

Analytical Balch. VFC11555 Analytical Method: SW8021B Instrument: Agilent 7890 PID/FID Analyst: ST Analytical Date/Time: 8/7/2013 10:54:00AM Prep Batch: VXX25028 Prep Method: SW5035A Prep Date/Time: 8/7/2013 8:00:00AM Prep Initial Wt./Vol.: 50 g Prep Extract Vol: 25 mL

Print Date: 08/14/2013 9:32:12AM



Blank Spike ID: LCS for HBN 1133443 [VXX25028] Blank Spike Lab ID: 1166279 Date Analyzed: 08/07/2013 11:12 Spike Duplicate ID: LCSD for HBN 1133443 [VXX25028] Spike Duplicate Lab ID: 1166280 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443001, 1133443002, 1133443003, 1133443005, 1133443006, 1133443010

		_						
I	Blank Spike	(ug/Kg)	Spike Duplicate (ug/Kg)					
Spike	Result	<u>Rec (%)</u>	<u>Spike</u>	Result	<u>Rec (%)</u>	CL	<u>RPD (%)</u>	RPD CL
1250	1180	95	1250	1130	91	(75-125)	4.30	(< 20)
1250	1260	101	1250	1220	98	(75-125)	3.50	(< 20)
1250	1260	101	1250	1220	97	(75-125)	3.30	(< 20)
2500	2550	102	2500	2460	99	(80-125)	3.60	(< 20)
1250	1250	100	1250	1210	97	(70-125)	3.30	(< 20 )
		99	1250	97.9	98	(72-119)	0.61	
	<u>Spike</u> 1250 1250 1250 2500 1250	SpikeResult1250118012501260125012601250255012501250	Blank Spike (ug/Kg)           Spike         Result         Rec (%)           1250         1180         95           1250         1260         101           1250         1260         101           1250         1260         101           1250         1250         102           1250         1250         100	Blank Spike (ug/Kg)         S           Spike         Result         Rec (%)         Spike           1250         1180         95         1250           1250         1260         101         1250           1250         1260         101         1250           1250         1260         101         1250           1250         1250         102         2500           1250         1250         100         1250           1250         1250         100         1250	Blank Spike (ug/Kg)         Spike Duplic           Spike         Result         Rec (%)         Spike         Result           1250         1180         95         1250         1130           1250         1260         101         1250         1220           1250         1260         101         1250         1220           2500         2550         102         2500         2460           1250         1250         100         1250         1210	Blank Spike (ug/Kg)         Spike Duplicate (ug/Kg)           Spike         Result         Rec (%)         Spike         Result         Rec (%)           1250         1180         95         1250         1130         91           1250         1260         101         1250         1220         98           1250         1260         101         1250         1220         97           2500         2550         102         2500         2460         99           1250         1250         100         1250         1210         97	Blank Spike (ug/Kg)         Spike Duplicate (ug/Kg)           Spike         Result         Rec (%)         Spike         Result         Rec (%)         CL           1250         1180         95         1250         1130         91         (75-125)           1250         1260         101         1250         1220         98         (75-125)           1250         1260         101         1250         1220         97         (75-125)           2500         2550         102         2500         2460         99         (80-125)           1250         1250         100         1250         1210         97         (70-125)           99         1250         97.9         98         (72-119)	Blank Spike (ug/Kg)Spike Duplicate (ug/Kg)SpikeResultRec (%)SpikeResultRec (%)CLRPD (%)12501180951250113091(75-125)4.30125012601011250122098(75-125)3.50125012601011250122097(75-125)3.30250025501022500246099(80-125)3.60125012501001250121097(70-125)3.30

Analytical Batch: VFC11555 Analytical Method: SW8021B Instrument: Agilent 7890 PID/FID Analyst: ST Prep Batch: VXX25028 Prep Method: SW5035A Prep Date/Time: 08/07/2013 08:00 Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Print Date: 08/14/2013 9:32:13AM



#### Matrix Spike Summary

Original Sample ID: 1166290 MS Sample ID: 1166283 MS MSD Sample ID: 1166284 MSD Analysis Date: 08/07/2013 12:26 Analysis Date: 08/07/2013 12:45 Analysis Date: 08/07/2013 13:03 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443001, 1133443002, 1133443003, 1133443005, 1133443006, 1133443010

Results by SW8021B			_							
		Mat	Matrix Spike (ug/Kg)		Spike Duplicate (ug/Kg)					
Parameter	<u>Sample</u>	Spike	Result	<u>Rec (%)</u>	Spike	Result	<u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Benzene	6.12	431	422	97	431	403	92	75-125	4.70	(< 20)
Ethylbenzene	635	431	1090	106	431	1050	97	75-125	3.80	(< 20)
o-Xylene	2380	431	2870	115	431	2770	92	75-125	3.50	(< 20)
P & M -Xylene	3460	862	4390	108	862	4210	88	80-125	4.10	(< 20)
Toluene	474	431	920	103	431	886	96	70-125	3.70	(< 20)
Surrogates										
1,4-Difluorobenzene		431	434	101	431	432	100	72-119	0.48	

# **Batch Information**

Analytical Batch: VFC11555 Analytical Method: SW8021B Instrument: Agilent 7890 PID/FID Analyst: ST Analytical Date/Time: 8/7/2013 12:45:00PM Prep Batch: VXX25028 Prep Method: AK101 Extraction (S) Prep Date/Time: 8/7/2013 8:00:00AM Prep Initial Wt./Vol.: 145.01g Prep Extract Vol: 25.00mL

Print Date: 08/14/2013 9:32:14AM



# Method Blank

Blank ID: MB for HBN 1468920 [XXX/29531] Blank Lab ID: 1164263 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443001, 1133443003

#### Results by 8270D SIMS (PAH)

Parameter	Results		וס	Units
1-Methylnaphthalene	3 00U	<u>5 00</u>	<u></u> 1.50	ua/Ka
2-Methylnaphthalene	3.00U	5.00	1.50	ua/Ka
Acenaphthene	3.00U	5.00	1.50	ua/Ka
Acenaphthylene	3.00U	5.00	1.50	ua/Ka
Anthracene	3.00U	5.00	1.50	ua/Ka
Benzo(a)Anthracene	3.00U	5.00	1.50	ua/Ka
Benzolalpyrene	3.00U	5.00	1.50	ua/Ka
Benzo[b]Fluoranthene	3.00U	5.00	1.50	ua/Ka
Benzo[g.h.i]pervlene	3.00U	5.00	1.50	ua/Ka
Benzo[k]fluoranthene	3.00U	5.00	1.50	ua/Ka
Chrysene	3.00U	5.00	1.50	ug/Kg
Dibenzo[a,h]anthracene	3.00U	5.00	1.50	ug/Kg
Fluoranthene	3.00U	5.00	1.50	ug/Kg
Fluorene	3.00U	5.00	1.50	ug/Kg
Indeno[1,2,3-c,d] pyrene	3.00U	5.00	1.50	ug/Kg
Naphthalene	3.00U	5.00	1.50	ug/Kg
Phenanthrene	3.00U	5.00	1.50	ug/Kg
Pyrene	3.00U	5.00	1.50	ug/Kg
Surrogates				
2-Fluorobiphenvl	86.8	45-105		%
Terphenyl-d14	106	30-125		%

### **Batch Information**

Analytical Batch: XMS7490 Analytical Method: 8270D SIMS (PAH) Instrument: HP 6890/5973 MS SVQA Analyst: RTS Analytical Date/Time: 8/2/2013 8:59:00PM Prep Batch: XXX29531 Prep Method: SW3550C Prep Date/Time: 8/1/2013 9:15:00PM Prep Initial Wt./Vol.: 22.5 g Prep Extract Vol: 1 mL

Print Date: 08/14/2013 9:32:14AM

SGS North America Inc.



Blank Spike ID: LCS for HBN 1133443 [XXX29531] Blank Spike Lab ID: 1164264 Date Analyzed: 08/02/2013 21:14

Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443001, 1133443003

#### Results by 8270D SIMS (PAH)

	В	lank Spike	(ug/Kg)	
Parameter	Spike	Result	<u>Rec (%)</u>	<u>CL</u>
1-Methylnaphthalene	22.2	19.9	90	(44-107)
2-Methylnaphthalene	22.2	18.4	83	(45-105)
Acenaphthene	22.2	19.3	87	(45-110)
Acenaphthylene	22.2	19.1	86	(45-105)
Anthracene	22.2	19.8	89	(55-105)
Benzo(a)Anthracene	22.2	21.6	97	(50-110)
Benzo[a]pyrene	22.2	18.3	82	(50-110)
Benzo[b]Fluoranthene	22.2	24.3	109	(45-115)
Benzo[g,h,i]perylene	22.2	22.9	103	(40-125)
Benzo[k]fluoranthene	22.2	21.9	99	(45-125)
Chrysene	22.2	24.4	110	(55-110)
Dibenzo[a,h]anthracene	22.2	22.5	101	(40-125)
Fluoranthene	22.2	24.1	108	(55-115)
Fluorene	22.2	20.9	94	(50-110)
Indeno[1,2,3-c,d] pyrene	22.2	23.1	104	(40-120)
Naphthalene	22.2	18.6	84	(40-105)
Phenanthrene	22.2	21.6	97	(50-110)
Pyrene	22.2	23.6	106	(45-125)
Surrogates				
2-Fluorobiphenyl			93	(45-105)
Terphenyl-d14			108	(30-125)

### **Batch Information**

Analytical Batch: XMS7490 Analytical Method: 8270D SIMS (PAH) Instrument: HP 6890/5973 MS SVQA Analyst: RTS Prep Batch: XXX29531 Prep Method: SW3550C Prep Date/Time: 08/01/2013 21:15 Spike Init Wt./Vol.: 22.2 ug/Kg Extract Vol: 1 mL Dupe Init Wt./Vol.: Extract Vol:

Print Date: 08/14/2013 9:32:15AM

SGS North America Inc.



#### Matrix Spike Summary

Original Sample ID: 1133440012 MS Sample ID: 1164265 MS MSD Sample ID: 1164266 MSD

QC for Samples: 1133443001, 1133443003

Analysis Date: 08/02/2013 21:44 Analysis Date: 08/02/2013 21:59 Analysis Date: 08/02/2013 22:29 Matrix: Soil/Solid (dry weight)

Results by 8270D SIMS (	PAH)		_								
		Mat	trix Spike (ι	Spike (ug/Kg) Spike Duplicate (ug/			(ug/Kg)				
Parameter	Sample	Spike	Result	<u>Rec (%)</u>	Spike	Result	<u>Rec (%</u>	<u>6)</u>	CL	<u>RPD (%)</u>	RPD CL
1-Methylnaphthalene	74.1	23.5	103	123 *	23.4	106	135	*	44-107	2.70	(< 30)
Acenaphthene	3.18U	23.5	34.8	148 *	23.4	38.5	165	*	45-110	10.30	(< 30)
Acenaphthylene	3.18U	23.5	23.4	100	23.4	26.9	115	*	45-105	14.20	(< 30)
Anthracene	3.18U	23.5	55.0	235 *	23.4	55.8	239	*	55-105	1.20	(< 30)
Benzo(a)Anthracene	18.5	23.5	46.4	119 *	23.4	43.8	108		50-110	6.00	(< 30)
Benzo[a]pyrene	3.18U	23.5	30.7	131 *	23.4	28.4	122	*	50-110	7.80	(< 30)
Benzo[b]Fluoranthene	3.18U	23.5	3.18U	0 *	23.4	3.18U	0	*	45-115	0.00	(< 30)
Benzo[g,h,i]perylene	3.18U	23.5	22.6	97	23.4	20.7	89		40-125	9.10	(< 30)
Benzo[k]fluoranthene	3.18U	23.5	3.18U	0 *	23.4	3.18U	0	*	45-125	0.00	(< 30)
Chrysene	36.3	23.5	68.5	138 *	23.4	59.8	101		55-110	13.70	(< 30)
Dibenzo[a,h]anthracene	3.18U	23.5	20.3	87	23.4	19.7	84		40-125	3.30	(< 30)
Fluoranthene	41.6	23.5	73.1	134 *	23.4	64.8	99		55-115	12.00	(< 30)
Fluorene	3.18U	23.5	52.6	224 *	23.4	56.3	241	*	50-110	6.90	(< 30)
Indeno[1,2,3-c,d] pyrene	3.18U	23.5	21.1	90	23.4	20.8	89		40-120	1.30	(< 30)
Naphthalene	34.6	23.5	57.3	97	23.4	63.4	124	*	40-105	10.40	(< 30)
Phenanthrene	62.9	23.5	87.1	103	23.4	88.5	110		50-110	1.60	(< 30)
2-Methylnaphthalene	98.3	23.5	141	183 *	23.4	128	124	*	45-105	10.50	(< 30)
Pyrene	123	23.5	177	233 *	23.4	159	156	*	45-125	10.80	(< 30)
Surrogates											
2-Fluorobiphenyl		23.5	21.0	90	23.4	24.3	104		45-105	14.50	
Terphenyl-d14		23.5	26.8	114	23.4	24.9	106		30-125	7.70	

#### **Batch Information**

Analytical Batch: XMS7490 Analytical Method: 8270D SIMS (PAH) Instrument: HP 6890/5973 MS SVQA Analyst: RTS Analytical Date/Time: 8/2/2013 9:59:00PM Prep Batch: XXX29531

Prep Method: Sonication Extraction Soil 8270 PAH SIM Prep Date/Time: 8/1/2013 9:15:00PM Prep Initial Wt./Vol.: 22.65g Prep Extract Vol: 1.00mL

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Blank ID: MB for HBN 146 Blank Lab ID: 1164595	9012 [XXX/29544]	Matrix	k: Soil/Solid (d	ry weight)				
QC for Samples: 1133443001, 1133443002, 1	133443003, 1133443004, 1133	3443005, 1133443006	ì					
Results by AK102								
Parameter	Results	LOQ/CL	<u>DL</u>	<u>Units</u>				
Diesel Range Organics	12.4U	20.0	6.20	mg/Kg				
Surrogates								
5a Androstane	96.3	60-120		%				
Batch Information								
Analytical Batch: XFC109	991	Prep Ba	tch: XXX29544					
Analytical Matheady AI/101	2	Prep Me	ethod: SW3550	С				
Analytical Method: AK10	Instrument: HP 7890A FID SV E R			Prep Date/Time: 8/2/2013 8:30:00PM				
Instrument: HP 7890A	Analyst: EAB			Prep Initial Wt./Vol.: 30 g Prep Extract Vol: 1 mL				

Print Date: 08/14/2013 9:32:17AM

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Blank Spike ID: LCS for HB Blank Spike Lab ID: 116459 Date Analyzed: 08/05/2013 QC for Samples: 1133443	N 1133443   96 3 18:04 3001, 113344	XXX2954	4] 3443003, 113	Spi [XX Spi Ma	ke Duplica (X29544] ke Duplica trix: Soil/S	ate ID: LC ate Lab ID Solid (dry v	SD for HBN 1 : 1164597 weight)	133443	
QC for Samples: 113344	3001, 113344	3002, 1133	3443003, 113						
			,	3443004,	113344300	)5, 113344	3006		
Results by AK102									
	В	lank Spike	(mg/Kg)	S	pike Duplic	ate (mg/Kg	)		
Parameter	Spike	Result	Rec (%)	Spike	Result	<u>Rec (%)</u>	CL	<u>RPD (%)</u>	RPD CL
Diesel Range Organics	167	152	91	167	159	96	(75-125)	4.60	(< 20)
urrogates									
5a Androstane			91	3.33	94.5	95	(60-120)	4.20	
Batch Information									
Analytical Batch: <b>XFC10991</b> Analytical Method: <b>AK102</b> Instrument: <b>HP 7890A</b> Analyst: <b>EAB</b>	FID SV E R			Pre Pre Pre Spil Dup	p Batch: X p Method: p Date/Tim ke Init Wt./\ pe Init Wt./\	<b>XX29544</b> <b>SW3550C</b> e: <b>08/02/20</b> /ol.: 167 m /ol.: 167 m	0 <b>13 20:30</b> ng/Kg Extract g/Kg Extract \	Vol: 1 mL /ol: 1 mL	

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Blank ID: MB for HBN 1469012 [XXX/29544]       Matrix: Soil/Solid (dry weight)         Blank Lab ID: 1164595       QC for Samples:         1133443001, 1133443002, 1133443003, 1133443004, 1133443005, 1133443006       Herein Control (Control (Contro) (Control (Control (Control (Control (Con	Method Blank		1		
QC for Samples:         1133443001, 1133443002, 1133443003, 1133443004, 1133443005, 1133443006         Results by AK103         Parameter       Results         LOQ/CL       DL       Units         Residual Range Organics       12.4U       20.0       6.20       mg/Kg         Surrogates       n-Triacontane-d62       95.1       60-120       %         Batch Information       Prep Batch: XXX29544       XXX29544         Analytical Batch: XFC10991       Prep Method: SW3550C       Prep Date/Time: 8/2/2013       8:30:00PM         Instrument: HP 7890A       FID SV E R       Prep Date/Time: 8/2/2013       8:30:00PM         Analyst: EAB       FID SV E R       Prep Initial Wt./Vol.: 30 g	Blank ID: MB for HBN 1469 Blank Lab ID: 1164595	9012 [XXX/29544]	Matrix	: Soil/Solid (d	dry weight)
Results by AK103         Parameter       Results       LOQ/CL       DL       Units         Residual Range Organics       12.4U       20.0       6.20       mg/Kg         Surrogates       n-Triacontane-d62       95.1       60-120       %         Batch Information       Prep Batch: XX29544       Prep Method: SW3550C         Instrument: HP 7890A       FID SV E R       Prep Date/Time: 8/2/2013       8:30:00PM         Analyst: EAB       FID SV E R       Prep Initial Wt./Vol.: 30 g       1000000000000000000000000000000000000	QC for Samples: 1133443001, 1133443002, 11	33443003, 1133443004, 1 <sup>-</sup>	133443005, 1133443006		
ParameterResultsLOQ/CLDLUnitsResidual Range Organics12.4U20.06.20mg/KgSurrogatesn-Triacontane-d6295.160-120%Batch InformationAnalytical Batch: XFC10991 Analytical Method: AK103 Instrument: HP 7890APrep Batch: XXX29544 Prep Date/Time: 8/2/20138:30:00PM Prep Initial Wt./Vol.: 30 g	Results by AK103				
Residual Range Organics       12.4U       20.0       6.20       mg/Kg         Surrogates       n-Triacontane-d62       95.1       60-120       %         Batch Information       Analytical Batch: XFC10991       Prep Batch: XXX29544       %         Analytical Method: AK103       Prep Method: SW3550C       Prep Date/Time: 8/2/2013       8:30:00PM         Analyst: EAB       Prep Initial Wt./Vol.: 30 g       Prep Initial Wt./Vol.: 30 g	Parameter	<u>Results</u>	LOQ/CL	<u>DL</u>	<u>Units</u>
Surrogates         n-Triacontane-d62       95.1       60-120       %         Batch Information       Prep Batch: XFC10991       %         Analytical Batch: XFC10991       Prep Batch: XXX29544       Prep Method: SW3550C         Instrument: HP 7890A       FID SV E R       Prep Date/Time: 8/2/2013       8:30:00PM         Analyst: EAB       Prep Initial Wt./Vol.: 30 g	Residual Range Organics	12.4U	20.0	6.20	mg/Kg
n-Inacontane-d62     95.1     60-120     %       Batch Information     Analytical Batch: XFC10991     Prep Batch: XXX29544       Analytical Method: AK103     Prep Method: SW3550C       Instrument: HP 7890A     FID SV E R       Analyst: EAB     Prep Initial Wt./Vol.: 30 g	Surrogates	<b></b>	00.400		24
Batch Information         Analytical Batch: XFC10991       Prep Batch: XXX29544         Analytical Method: AK103       Prep Method: SW3550C         Instrument: HP 7890A       FID SV E R         Analyst: EAB       Prep Initial Wt./Vol.: 30 g	n-Triacontane-d62	95.1	60-120		%
Analytical Batch: XFC10991Prep Batch: XXX29544Analytical Method: AK103Prep Method: SW3550CInstrument: HP 7890AFID SV E RAnalyst: EABPrep Initial Wt./Vol.: 30 g	Batch Information				
Analytical Method: AK103Prep Method: SW3550CInstrument: HP 7890AFID SV E RAnalyst: EABPrep Initial Wt./Vol.: 30 g	Analytical Batch: XFC1099	91	Prep Bat	ch: XXX2954	4
Analyst: EAB Prep Initial Wt./Vol.: 30 g	Analytical Method: AK103		Prep Me	thod: SW3550	DC
	Analyst: EAB	FID SV E R	Prep Dai Prep Initi	al Wt./Vol.: 3	0 a
Analytical Date/Time: 8/5/2013 5:44:00PM Prep Extract Vol: 1 mL	Analytical Date/Time: 8/5/2	2013 5:44:00PM	Prep Ext	ract Vol: 1 mL	-

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Blank Spike ID: LCS for HBN 1133443 [XXX29544]       Spike Duplicate ID: LCSD for HBN 1133443         Blank Spike Lab ID: 1164596       [XXX29544]         Date Analyzed: 08/05/2013 18:04       Spike Duplicate Lab ID: 1164597         Matrix: Soil/Solid (dry weight)       Matrix: Soil/Solid (dry weight)         QC for Samples:       1133443002, 1133443003, 1133443004, 1133443005, 1133443006         Results by AK103       Blank Spike (mg/Kg)         Spike Duplicate (mg/Kg)       Spike Duplicate (mg/Kg)         Parameter       Spike         Residual Range Organics       167       147       88       167       150       90       (60-120)       2.30       (<         Surrogates       n-Triacontane-d62       86       3.33       87.6       88       (60-120)       2.50	
QC for Samples:       1133443001, 1133443002, 1133443003, 1133443004, 1133443005, 1133443006         Results by AK103       Blank Spike (mg/Kg)         Spike Mg/Kg)       Spike Duplicate (mg/Kg)         Parameter       Spike         Result Range Organics       167         147       88         167       150         90       (60-120)         2.30       (<         Surrogates       86         n-Triacontane-d62       86         86       3.33         87.6       88         88       (60-120)         2.50	
Results by AK103         Blank Spike (mg/Kg)       Spike Duplicate (mg/Kg)         Parameter       Spike       Result       Rec (%)       Spike       Result       Rec (%)       CL       RPD (%)       RF         Residual Range Organics       167       147       88       167       150       90       (60-120)       2.30       (<         surrogates	
Blank Spike (mg/Kg)         Spike Duplicate (mg/Kg)           Parameter         Spike         Result         Rec (%)         Spike         Result         Rec (%)         CL         RPD (%)         RF           Residual Range Organics         167         147         88         167         150         90         (60-120)         2.30         (<           Surrogates         n-Triacontane-d62         86         3.33         87.6         88         (60-120)         2.50           Batch Information         100         100         100         100         100         100         100         100	
Parameter         Spike         Result         Rec (%)         Spike         Result         Rec (%)         CL         RPD (%)         RF           Residual Range Organics         167         147         88         167         150         90         (60-120)         2.30         (<           Surrogates         n-Triacontane-d62         86         3.33         87.6         88         (60-120)         2.50           Batch Information         Image: Comparison of the second sec	
Residual Range Organics       167       147       88       167       150       90       (60-120)       2.30       (<	PD CL
Burrogates         n-Triacontane-d62         86         3.33         87.6         88         ( 60-120 )         2.50           Batch Information	< 20 )
n-Triacontane-d62 86 3.33 87.6 88 (60-120) 2.50 Batch Information	
Batch Information	
Analytical Batch: XFC10991       Prep Batch: XXX29544         Analytical Method: AK103       Prep Method: SW3550C         Instrument: HP 7890A       FID SV E R         Analyst: EAB       Prep Date/Time: 08/02/2013 20:30         Spike Init Wt./Vol.: 167 mg/Kg       Extract Vol: 1 mL         Dupe Init Wt./Vol.: 167 mg/Kg       Extract Vol: 1 mL	

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Method Blank								
Blank ID: MB for HBN 146 Blank Lab ID: 1164636	9058 [XXX/29545]	Matrix	k: Soil/Solid (c	ry weight)				
QC for Samples: 1133443007, 1133443008, 1	133443009, 1133443010							
Results by AK102								
Parameter	Results	LOQ/CL	<u>DL</u>	<u>Units</u>				
Diesel Range Organics	12.4U	20.0	6.20	mg/Kg				
Surrogates								
5a Androstane	83.1	60-120		%				
Batch Information								
Analytical Batch: XFC110	002	Prep Ba	tch: XXX2954	5				
*	Prep Method: SW3550C							
Analytical Method: AK102	Instrument: HP 6890 Series II FID SV D R			Prep Date/Time: 8/3/2013 8:00:00AM				
Analytical Method: AK102 Instrument: HP 6890 Seri	ies II FID SV D R	Prep Da Brop Init	te/Time: 8/3/20	013 8:00:00AM				

Print Date: 08/14/2013 9:32:19AM

Blank Spike ID: LCS for HBN 1133443 [XXX29545] Blank Spike Lab ID: 1164637 Date Analyzed: 08/09/2013 06:42 Spike Duplicate ID: LCSD for HBN 1133443 [XXX29545] Spike Duplicate Lab ID: 1164638 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443007, 1133443008, 1133443009, 1133443010

Results by AK102									
	E	Blank Spike	(mg/Kg)	S	pike Duplic	ate (mg/Kg)			
Parameter	Spike	Result	<u>Rec (%)</u>	<u>Spike</u>	Result	<u>Rec (%)</u>	<u>CL</u>	<u>RPD (%)</u>	RPD CL
Diesel Range Organics	167	142	85	167	142	85	(75-125)	0.37	(< 20)
Surrogates									
5a Androstane			90	3.33	87.8	88	(60-120)	2.40	
Batch Information									
Analytical Batch: XFC1100	2			Pre	p Batch: X	XX29545			
Analytical Method: AK102				Pre	p Method:	SW3550C			
Instrument: HP 6890 Series	s II FID SV D R	R		Pre	p Date/Tim	e: 08/03/201	3 08:00		
Analyst: EAB				Spi	ke Init Wt./\	Vol.: 167 mg	J/Kg Extract	Vol: 1 mL	
-				Du	be Init Wt./\	/ol.: 167 mg	/Kg Extract	Vol: 1 mL	

Print Date: 08/14/2013 9:32:20AM

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Blank ID: MB for HBN 1469058 [XXX/29545] Blank Lab ID: 1164636		Matrix: Soil/Solid (dry weight)				
33443009, 1133443010						
	j					
Results	 LOQ/CL	<u>DL</u>	<u>Units</u>			
12.4U	20.0	6.20	mg/Kg			
89.8	60-120		%			
2	Prep Ba	tch: XXX29545	5			
	Prep Me	ethod: SW3550	С			
3 II FID SV D R	Prep Da Prep Ini	ite/Time: 8/3/20	013 8:00:00AM			
	1100 110		9			
	)58 [XXX/29545] 3443009, 1133443010 <u>Results</u> 12.4U 89.8 2 2	D58 [XXX/29545]       Matrix         A3443009, 1133443010	D58 [XXX/29545]       Matrix: Soil/Solid (d         A3443009, 1133443010       LOQ/CL       DL         Results       LOQ/CL       DL         12.4U       20.0       6.20         89.8       60-120         Prep Batch: XXX29545       Prep Method: SW3550         Prep Date/Time: 8/3/20       Prep Date/Time: 8/3/20	D58 [XXX/29545]       Matrix: Soil/Solid (dry weight)         A3443009, 1133443010       LOQ/CL       DL         Results       LOQ/CL       DL       Units         12.4U       20.0       6.20       mg/Kg         89.8       60-120       %         Prep Batch: XXX29545 Prep Method: SW3550C         Prep Date/Time: 8/3/2013       8:00:00AM		

Print Date: 08/14/2013 9:32:21AM

Blank Spike ID: LCS for HBN 1133443 [XXX29545] Blank Spike Lab ID: 1164637 Date Analyzed: 08/09/2013 06:42 Spike Duplicate ID: LCSD for HBN 1133443 [XXX29545] Spike Duplicate Lab ID: 1164638 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443007, 1133443008, 1133443009, 1133443010

Results by AK103									
	E	Blank Spike	(mg/Kg)	S	pike Duplic	ate (mg/Kg)			
Parameter	Spike	Result	<u>Rec (%)</u>	Spike	Result	<u>Rec (%)</u>	CL	<u>RPD (%)</u>	RPD CL
Residual Range Organics	167	146	88	167	146	88	(60-120)	0.09	(< 20 )
Surrogates									
n-Triacontane-d62			85	3.33	83.4	83	(60-120)	1.40	
Batch Information									
Analytical Batch: XFC11002				Pre	p Batch: X	XX29545			
Analytical Method: AK103	Prep Method: SW3550C								
Instrument: HP 6890 Series	II FID SV D F	2		Prep Date/Time: 08/03/2013 08:00					
Analyst: EAB			Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL						
-				Du	be Init Wt./\	/ol.: 167 mg	/Kg Extract	Vol: 1 mL	

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# Method Blank

Blank ID: MB for HBN 1469261 [XXX/29561] Blank Lab ID: 1164758 Matrix: Soil/Solid (dry weight)

QC for Samples:

1133443007, 1133443009, 1133443010

# Results by 8270D SIMS (PAH)

Parameter	Results	LOQ/CL	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	3.00U	5.00	1.50	ug/Kg
2-Methylnaphthalene	3.00U	5.00	1.50	ug/Kg
Acenaphthene	3.00U	5.00	1.50	ug/Kg
Acenaphthylene	3.00U	5.00	1.50	ug/Kg
Anthracene	3.00U	5.00	1.50	ug/Kg
Benzo(a)Anthracene	3.00U	5.00	1.50	ug/Kg
Benzo[a]pyrene	3.00U	5.00	1.50	ug/Kg
Benzo[b]Fluoranthene	3.00U	5.00	1.50	ug/Kg
Benzo[g,h,i]perylene	3.00U	5.00	1.50	ug/Kg
Benzo[k]fluoranthene	3.00U	5.00	1.50	ug/Kg
Chrysene	3.00U	5.00	1.50	ug/Kg
Dibenzo[a,h]anthracene	3.00U	5.00	1.50	ug/Kg
Fluoranthene	2.54J	5.00	1.50	ug/Kg
Fluorene	3.00U	5.00	1.50	ug/Kg
Indeno[1,2,3-c,d] pyrene	3.00U	5.00	1.50	ug/Kg
Naphthalene	3.00U	5.00	1.50	ug/Kg
Phenanthrene	3.00U	5.00	1.50	ug/Kg
Pyrene	1.81J	5.00	1.50	ug/Kg
Surrogates				
2-Fluorobiphenyl	89.7	45-105		%
Terphenyl-d14	106	30-125		%

# **Batch Information**

Analytical Batch: XMS7499 Analytical Method: 8270D SIMS (PAH) Instrument: HP 6890/5973 MS SVQA Analyst: RTS Analytical Date/Time: 8/6/2013 10:15:00PM Prep Batch: XXX29561 Prep Method: SW3550C Prep Date/Time: 8/4/2013 10:15:00PM Prep Initial Wt./Vol.: 22.5 g Prep Extract Vol: 1 mL

Print Date: 08/14/2013 9:32:22AM

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#### Blank Spike Summary

Blank Spike ID: LCS for HBN 1133443 [XXX29561] Blank Spike Lab ID: 1164759 Date Analyzed: 08/06/2013 22:30

Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443007, 1133443009, 1133443010

#### Results by 8270D SIMS (PAH)

	В	lank Spike (	(ug/Kg)	
Parameter	Spike	Result	<u>Rec (%)</u>	<u>CL</u>
1-Methylnaphthalene	22.2	18.6	84	(44-107)
2-Methylnaphthalene	22.2	17.3	78	(45-105)
Acenaphthene	22.2	18.5	83	(45-110)
Acenaphthylene	22.2	19.3	87	(45-105)
Anthracene	22.2	17.5	79	(55-105)
Benzo(a)Anthracene	22.2	22.4	101	(50-110)
Benzo[a]pyrene	22.2	18.1	82	(50-110)
Benzo[b]Fluoranthene	22.2	21.6	97	(45-115)
Benzo[g,h,i]perylene	22.2	20.4	92	(40-125)
Benzo[k]fluoranthene	22.2	20.5	92	(45-125)
Chrysene	22.2	22.4	101	(55-110)
Dibenzo[a,h]anthracene	22.2	21.4	96	(40-125)
Fluoranthene	22.2	24.3	109	(55-115)
Fluorene	22.2	20.0	90	(50-110)
Indeno[1,2,3-c,d] pyrene	22.2	21.9	99	(40-120)
Naphthalene	22.2	17.9	80	(40-105)
Phenanthrene	22.2	20.5	92	(50-110)
Pyrene	22.2	22.4	101	(45-125)
Surrogates				
2-Fluorobiphenyl			87	(45-105)
Terphenyl-d14			105	(30-125)

### **Batch Information**

Analytical Batch: XMS7499 Analytical Method: 8270D SIMS (PAH) Instrument: HP 6890/5973 MS SVQA Analyst: RTS Prep Batch: XXX29561 Prep Method: SW3550C Prep Date/Time: 08/04/2013 22:15 Spike Init Wt./Vol.: 22.2 ug/Kg Extract Vol: 1 mL Dupe Init Wt./Vol.: Extract Vol:

Print Date: 08/14/2013 9:32:23AM

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



#### Matrix Spike Summary

Original Sample ID: 1133500004 MS Sample ID: 1164760 MS MSD Sample ID: 1164761 MSD Analysis Date: 08/06/2013 22:45 Analysis Date: 08/06/2013 23:00 Analysis Date: 08/06/2013 23:14 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133443007, 1133443009, 1133443010

#### Results by 8270D SIMS (PAH)

		Mat	rix Spike (l	ıg/Kg)	Spike	Duplicate	(ug/Kg)			
Parameter	Sample	Spike	Result	<u>Rec (%)</u>	Spike	Result	Rec (%)	CL	<u>RPD (%)</u>	RPD CL
1-Methylnaphthalene	18.1U	26.3	21.2	81	26.4	23.5	89	44-107	10.10	(< 30)
2-Methylnaphthalene	18.1U	26.3	26.4	100	26.4	31.1	118 *	45-105	16.30	(< 30)
Acenaphthene	91.9	26.3	131	151 *	26.4	134	156 *	45-110	1.20	(< 30)
Acenaphthylene	46.9	26.3	87.0	152 *	26.4	107	228 *	45-105	20.80	(< 30)
Fluorene	365	26.3	499	512 *	26.4	485	456 *	50-110	2.90	(< 30)
Naphthalene	18.1U	26.3	25.3	96	26.4	25.5	96	40-105	0.63	(< 30)
Anthracene	1510	26.3	1749	874 *	26.4	1773	982 *	55-105	1.70	(< 30)
Benzo(a)Anthracene	7440	26.3	10495	11600*	26.4	12051	17400 *	50-110	13.70	(< 30)
Benzo[a]pyrene	3740	26.3	5428	6440 *	26.4	7214	13100 *	50-110	28.20	(< 30)
Benzo[g,h,i]perylene	1250	26.3	1809	2100 *	26.4	2533	4830 *	40-125	33.40	* (< 30 )
Chrysene	6030	26.3	8432	9090 *	26.4	10398	16500 *	55-110	21.00	(< 30)
Dibenzo[a,h]anthracene	510J	26.3	682	651 *	26.4	1035	1980 *	40-125	41.10	* (< 30 )
Indeno[1,2,3-c,d] pyrene	1190	26.3	1749	2110 *	26.4	2461	4800 *	40-120	33.90	* (< 30 )
Phenanthrene	1420	26.3	2014	2220 *	26.4	1930	1890 *	50-110	4.30	(< 30)
Benzo[b]Fluoranthene	1840	26.3	2569	2770 *	26.4	3257	5360 *	45-115	23.60	(< 30)
Benzo[k]fluoranthene	724U	26.3	724U	0 *	26.4	724U	0 *	45-125	0.00	(< 30)
Fluoranthene	3480	26.3	4572	4170 *	26.4	4632	4370 *	55-115	1.20	(< 30)
Pyrene	2400	26.3	3148	2850 *	26.4	3378	3710 *	45-125	7.10	(< 30)
Surrogates										
2-Fluorobiphenyl		26.3	27.1	103	26.4	28.7	108 *	45-105	5.80	
Terphenyl-d14		26.3	72.3	274 *	26.4	76.6	290 *	30-125	6.00	

#### **Batch Information**

Analytical Batch: XMS7499 Analytical Method: 8270D SIMS (PAH) Instrument: HP 6890/5973 MS SVQA Analyst: RTS Analytical Date/Time: 8/6/2013 11:00:00PM Prep Batch: XXX29561 Prep Method: Sonication Extraction Soil 8270 PAH SIM Prep Date/Time: 8/4/2013 10:15:00PM Prep Initial Wt./Vol.: 22.90g Prep Extract Vol: 1.00mL

Print Date: 08/14/2013 9:32:23AM

SGS North America Inc.

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

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5	



l	CLIENT:	TRAVIS	PETERSON CON	SULTING			Instru Omi	ctions: ssions	Sectic may de	Ins 1 - Iay the	5 mus e onsel	t be fillec of analy	d out. sis.		-
	CONTACT:	Erić Mundahl	PHONE NO:	907-522	-4337	Sectio	5 U			P P	eservativ	υ			Page I of I
aoitoəƙ	PROJECT NAME:	AVEC Selawik	PROJECT/ PWSID/ PERMIT#:			# U			He of the second	AJAN STORY					
5	REPORTS TO	ö	E-MAIL:			0 Z	Type							Ì	
		Erib Mundahl	emun	dahl@tpeci.c	om	5 F	C = COMP								
	INVOICE TO:		QUOTE #:	#10752	Open	¥ -	G = GRAB	(MI	(8						
	<b>F</b>	ravis Peterson	P.O.#:			- Z	= W	IS 02	10511 EX	pe					
	RESERVED for lab use	SAMPLE IDENTIFICATI	ON DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	লহত	Multi fncre- mental Soils	ояя\ояа 758) нач	ата\ояд 8/гогуа)	тсгь ге					REMARKS/ LOC ID
	0A-C	101	7/30/13	9:18	56;1	2	5	X	X	X					UA TB
	3-A-B	102		9:27	,	2	-	×	X						
5	3 A.C	P du 3		9:34		2		X X	×	X					
, u0	5 Gir A- B	P05		9:52		Л.		X	X						
it09(	J-49	PIØ	<u> </u>	10:13		3	/		X						
5	Q P-B	r12		10:26		2		X	X						
	GAA-C	BL02-3		8m:11		3		× X	×	X					
	R A-B	BL65-3	-	11:56		2		×	×						
	して	1-10HW		12:06	<u> </u>	2	///	×	×	X					
	RO A-C	PIS	M	1:18	Ν	3		X X	X	×					
L	Relinquishe	d By: (1)	Date	Time	Received By:				Secti	on 4	DOD Proj	ect? Yes No	o Dat	ta Delivera	able Requirements:
	(A)		H3	<u>9:53</u>	]		(		Coole	ä					
្ទ រ	Relinquisher	d By: (2)	Date	Time	Received By:		$\square$		Reques	sted Turn.	around T	me and/or S	pecial Inst	tructions	
noitae	Relinquished	1 By: (3)	Date	Time	Received By:										
5									Temp B	llank °C:	513	1424	Ch Ch	ain of Cu	stody Seal: (Circle)
77	Relinquished	4By: (4)	Date	Time	Received For	Laborato	ıry By:		•	70	Ambient			-ACT RI	ROKEN ABSENT
of 04	J		(6/2	37,42	2-7	27	6	h	(See	attached	Sample F	t J leceipt Form	I) (See a	attached S	Sample Receipt Form)
1	[ ] 200 W. F [ ] 5500 Bu	<sup>3</sup> otter Drive Anchorage, A <sup>1</sup> siness Drive Wilmington, I	K 99518 Tel: (907) NC 28405 Tel: (910	562-2343 Fa ) 350-1903 F	ix: (907) 561-5: ax: (910) 350-1	301 1557	2		http://w	ww.sgs.c	om/terms	-and-condition	<u>81</u>		

F083-Kit\_Request\_and\_COC\_Templates-Blank Revised 2013-03-24

77 of 81





# SAMPLE RECEIPT FORM

Darian Cuitania.	Conditions	Commonte/Action Talen
Keview Criteria:	Vec No M/A	Comments/Action Taken:
were custody seals intact? Note # & location, if applicable.	Ves NO NA	
The second and the second seco	IES NO N/A	
Temperature blank compliant* (i.e., 0-6°C after CF)?	Ues NO N/A	
* Note: Exemption permitted for chilled samples collected less than 8 hours ago.		
Cooler ID: (a) $5.3$ w/ Therm.ID: $292$		
Cooler ID: @ w/ Therm.ID:		
Cooler ID: @ w/ Therm.ID:		
Cooler ID: @ w/ Therm.ID:		
Cooler ID: @ w/ Therm.ID:		
Note: If non-compliant, use form FS-0029 to document affected samples/analyses.		
If samples are received without a temperature blank, the "cooler"		
"COOLED TEMP" will be noted to the right. In cases where neither a		
temp blank nor cooler temp can be obtained note "ambient" or "chilled"		
If temperature(s) $< 0^{\circ}$ were all sample containers ice free?	Yes No MA	)
Delivery method (specify all that apply).	Note ABN/	
LISPS Alert Courier C&D Delivery AK Air	tracking #	
Lynden Carlile FRA PenAir		
$E_{edEv}$ IIPS NAC Other	See Attached	
$\rightarrow$ For WO# with airhills was the WO# & airhill	or MA	
info recorded in the Front Counter of og?	V N NT	
	Yes NO INA	
$\rightarrow$ For samples received with payment, note amount (\$ ) and	cash / check / CC (	circle one) or note:
$\rightarrow$ For samples received in FBKS, ANCH staff will verify all criter	la are reviewed.	SRF initiated by: <u>SIC</u> N/A
Were samples received within hold time?	Yes No N/A	
Note: Refer to form F-083 "Sample Guide" for hold time information.	Vac No N/A	
Do samples match $COC^*$ (i.e., sample iDs, dates/times confected)?	Ites NO N/A	
Were analyses requested unambiguous?	No. N/A	
Were analyses requested unamorgaous.	ALE NO N/A	South All a couched lid
Were samples in good condition (no leaks/cracks/oreakage)?	CES NO INA	semple of had a cherent it.
Packing material used (specify all that apply). Bubble wrap	1/31/13	Vut a new 110 on it. SLC 7/31/13
Separate plastic bags Vermiculite Other. Boxes	X N N	
Were all VOA vials free of headspace (i.e., bubbles < 6 mm)?	YES NO NA	
Were all soil VOAs field extracted with MeOH+BFB?	Yes NO N/A	
Were proper containers (type/mass/volume/preservative*) used?	ves no n/A	
* Note: Exemption permittee for waters to be analyzed for metals.	(Var) NT- NT/A	
were Trip Blanks (i.e., VOAs, LL-rig) in cooler with samples?	Ves No N/A	
For special handling (e.g., "MI" or foreign soils, lab filter, limited	Yes No N/A	
volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	TT AT	
For preserved waters (other than VOA vials, LL-Mercury or	Yes NO (N/A	
microbiological analyses), was pH verified and compliant?		
If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes NO WA	·
For RUSH/SHORT Hold Time, were COC/Bottles flagged	Yes No (N/A)	
accordingly? Was Rush/Short HT email sent, if applicable?		-
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were	Yes No (N/A)	
containers / paperwork flagged accordingly?		
For any question answered "No," has the PM been notified and	Yes No (N/A)	SRF Completed by:SLC 731/13
the problem resolved (or paperwork put in their bin)?		PM = N/A
Was PEER REVIEW of sample numbering/labeling completed?	Yes No (N/A)	Peer Reviewed by: N/A
Additional notes (if applicable):		·
· · · · · · · · · · · · · · · · · · ·		

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



SGS North America 200 W. Potter Drive, An phone (907) 562-2343,



# Characterization of TCLP Samples for LIMS Login

Date Characterized:	7/31/12		Analyst:	SLC						
Sample Container ID:	Matrix	%	ls sufficient volume/mass available?	Notes:						
(I) C	Xylene miscible (Top layer * = matrix 3 **)			If multiple jars were received, were they consistent? Yes / No / NA						
	Water miscible (Middle layer = matrix 6)		Yes / No	If biphasic, was there <b>only</b> one layer with sufficient sample						
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	10000	_							
(a) (	Xylene miscible (Top layer * = matrix 3 **)			If multiple jars were received, were they consistent? Yes / No / NA						
	Water miscible (Middle layer = matrix 6)		(Yes)/ No	***? Yes / No / (A)						
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100 %0		$S_{0}$ (						
ac	Xylene miscible (Top layer * = matrix 3 **)			If multiple jars were received, were they consistent? Yes / No / NA						
(G)C	Water miscible (Middle layer = matrix 6)		Yes / No	If biphasic, was there only one layer with sufficient sample ***? Yes / No / NA						
(9) C	Solid (Bottom layer = matrix 7 or 2 if % solids required)	(00°70		MUみ If multiple jars were received, were they consistent? Yes / No /M為						
(i) c	Xylene miscible (Top layer * = matrix 3 **)									
	Water miscible (Middle layer = matrix 6)		(Ye) / No	If biphasic, was there <b>only</b> one layer with sufficient sample ***? Yes / No / NA						
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100%0		So t						
	Xylene miscible (Top layer * = matrix 3 **)			If multiple jars were received, were they consistent? Yes / No / NA						
	Water miscible (Middle layer = matrix 6)		(Yeg) / No	If biphasic, was there <b>only</b> one layer with sufficient sample ***? Yes / No / NA Sample description/other observations:						
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	(00°13		50:(						
Remember:	* = Chlorinated oils will be heav	ier than water and u	present as the bottom	n later.						

\*\* = Oils must be filterable to be logged in as matrix 3. Nonfilterable oils must be logged in as matrix 7. \*\*\* = Refer to F078 'Characterization of TCLP Samples for LIMS' to determine if there's sufficent volume/mass.

1	1	3	3	4	4	3

### **Returned Bottles Inventory**

Name of							
individual returning bottles:					Date Received:	7/31/13	>
Client Name:	Travis P	eterson			Received by:	SLC	
Project Name:	AVEC S	elawit			SGS PM:	VLP	
Preservative:	unpres.	H2SO4	HCI	HNO3	NaOH	other	vials of MeOH
HDPE/Nalgene:							
1-1							
500-ml							
250-ml							
105 ml							
125-mi							
other							
Amber Glass:							
1-L BR							
500-ml BR							
250-ml BR			· · · · ·				
125-m1 BP							
120-111 DK							
8-oz SS	1						
4-oz SS	6						
4-07 w/ conto	6						
4-02 w/ septa							(
40-ml VOA vial							6
other							
Subtotal:	12						6

~~~ The bottom of this form should be completed by the Project Manager, who will determine how apply charges. ~~~

Note: Returned bottles (regardless of size/pres.) are billed back at \$4/bottle **unless otherwise quoted**. **These prices are only for bottles returned to the lab for disposal**. Unused/unreturned bottles are billed separately. Please see Accounting for current price list.

1133443

**&**.00 wo#:\_\_\_\_ \$

Amount to Invoice Client:

| Č             | Č                     | SGS Nort                          | th America Inc.                                            |                                             | 33443        | <b>6Â</b>                                 |                                                                      | Sample Kit R                     | kequest                    |           |
|---------------|-----------------------|-----------------------------------|------------------------------------------------------------|---------------------------------------------|--------------|-------------------------------------------|----------------------------------------------------------------------|----------------------------------|----------------------------|-----------|
| R             | ß                     | 200 W. Potter<br>3180 Peger Rd    | Dr., Anchorage, AK 99518 (<br>1., Fairbanks, AK 99701 (ph) | ph) 5 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - |              |                                           | Client pickup Date Deliver to client Shipment Method Airline Carrier | : 7/26/2013 Friday               | Time: noonist              |           |
| Cli           | ent Name:             |                                   | Travis Peterson                                            |                                             |              |                                           | Airbill Number                                                       |                                  |                            |           |
| ō             | rdered By:            | Eric Mundahl                      | e-mail:                                                    | emundahl@tpeci.com                          |              |                                           | Date to ship by                                                      |                                  |                            |           |
|               | Phone #:              |                                   | 907-522-4337                                               |                                             |              |                                           | Notes                                                                |                                  |                            |           |
| Proj          | ect Name:             |                                   | AVEC Selawik                                               |                                             |              |                                           | Kit request taken by                                                 | · VLP                            | Date: 7/25/                | 2013      |
|               | Quote #:              |                                   | #10752 Open                                                |                                             |              |                                           | Kit prepared by                                                      | .hhv                             | Date: 7 Z                  | 5 18      |
| 1             | Delivery:             |                                   |                                                            |                                             |              |                                           | Kit checked by                                                       | ž                                | Date: 7-2                  | 6-13      |
|               | I                     |                                   |                                                            |                                             |              | Estimated date f                          | Kit shipped by<br>or samples returning to the lab                    | Week of the 29th?                | Date:                      |           |
| PM R          | -<br>eminders:        |                                   |                                                            |                                             |              |                                           |                                                                      |                                  |                            |           |
|               | JTrack all            | Lot#                              | □ SOW/SAP/QAI                                              | P<br>Police<br>Notice                       |              | □ Total # Bottles i                       | ncludes bottles for % Soli                                           | ds [                             | ] DQOs<br>1 Problem Matriv |           |
| Notes: N      | lote: Only 3          | PAHs, to be taken out of sai      | me jars as DRO/RRO                                         |                                             |              | adout mangane                             |                                                                      | 1                                |                            |           |
| No.           |                       | •                                 |                                                            | Ę                                           | •            | # • 1 · •••• 4                            | Pres.                                                                | hold                             | #QC To                     | la -      |
| Samples       | Matrix                | Analysis                          | Container                                                  | Dize & Lype                                 | 103.         | 4 Incl allog                              | 1014                                                                 | 2001                             | DOINCS DOI                 | 1103      |
| 16            | Soil                  | DRO/RRO                           | 1 x 4-oz                                                   | amber                                       | None         |                                           |                                                                      |                                  |                            | 6         |
| 16            | Soil                  | GRO/BTEX (AK101/8021F             | B) 1 x 4-oz prewt'd                                        | with septa                                  | McOH+BFB     |                                           |                                                                      |                                  |                            | 0         |
| 5             | Soil                  | TCLP Lead                         | 1 x 8-oz                                                   | amber                                       | None         |                                           |                                                                      |                                  |                            |           |
|               |                       |                                   |                                                            |                                             |              |                                           |                                                                      |                                  |                            |           |
|               |                       |                                   |                                                            |                                             |              |                                           |                                                                      |                                  |                            |           |
|               |                       |                                   |                                                            |                                             |              |                                           |                                                                      |                                  |                            |           |
|               |                       |                                   |                                                            |                                             |              |                                           |                                                                      |                                  |                            |           |
|               |                       |                                   |                                                            |                                             |              |                                           |                                                                      |                                  |                            |           |
|               |                       |                                   |                                                            |                                             |              |                                           |                                                                      |                                  |                            |           |
| □ Pack for SI | iipping via aii       | r carrier                         | Other N                                                    | Votes/Reminders for Kit                     | Prep:        | Attention Client/Sa                       | mpler:                                                               | Please remember the f            | ollowing sampling gui      | delines - |
| I 125mL Te    | mperature B           | tlank                             | 9 St Lise                                                  | er cooler                                   |              | -<br>-<br>-                               |                                                                      |                                  |                            |           |
| LI 500mL Ter  | mperature Bl£         | urk<br>ici _ C, _O                |                                                            |                                             |              | <ol> <li>Do not rinse containe</li> </ol> | or before filling and be aware of                                    | any acid preservative in cor     | ntainer.                   |           |
| Soil VOA      | Trip Blank -          | Lot#: VW & 20 8                   |                                                            |                                             |              | 2. Fill container to top,                 | but do not overfill (except volat                                    | les which should be headsp       | ace free).                 |           |
| Water VO/     | A Trip Blank          | - Lot#:<br>                       |                                                            |                                             |              | 3. Label the container v                  | vith your sample/site ID, as well                                    | as the date & time of collec     | ction.                     |           |
|               | l'rip Blank - L<br>MT | .01#:<br>- D11- 1#-               |                                                            |                                             |              | 4. Full in the Chain of C                 | ustody.<br>Los to vour cooler & nock to                              | manta hrankana                   |                            |           |
|               | Mercury Tri           | ) Blank- Lot#:                    |                                                            |                                             |              | <ol> <li>Add Ifozen gei packs</li> </ol>  | or ice to your cooler & pack to                                      | prevent oreakage.                |                            |           |
| SGS COC       | S - Circle reg        | <i>d format:</i> * Blank COC *    |                                                            | * COC initiated by PN                       | A (attached) | ;                                         |                                                                      |                                  |                            |           |
| Custody Se    | sals                  | * Drinking Wa                     | ater COC template                                          | * WasteWater COC ten                        | nplate       | Note: Charges may                         | be invoiced for bottles which :                                      | ure unused or improperly         | used.                      |           |
| ビ Labels      |                       | * UST COC te                      | sinplate                                                   | * Mining COC template                       | 0            |                                           |                                                                      |                                  |                            |           |
| Coolers       | ;                     |                                   | c temptate                                                 | - I LEFT CUC IBIIDIAIE                      |              | u you nave a                              | ny questions concerning this si<br>t vour Profact Managar for as     | unpre Kut,<br>sistense Thank von |                            |           |
| Gel Ice (ci)  | ap<br>rcle one. (in e | ach cooler OR in a separate coole | er)                                                        |                                             |              | ארמאל רחוויקר                             | 1 Jon 1 10 cct manager 101 as                                        |                                  |                            |           |
| Pack simils   | Ir bottles toge       | ther OR custom packing (circle    | e one)                                                     |                                             |              |                                           |                                                                      |                                  |                            |           |
| □ Send Instru | Ictions               |                                   |                                                            |                                             |              |                                           |                                                                      |                                  |                            |           |
| Include For   | reign Soil Per        | mit                               |                                                            |                                             |              |                                           |                                                                      |                                  |                            |           |

F083-Kit\_Req\_and\_COC\_Templates-KitReq Revised 2013-03-24

APPENDIX D: Professional Qualifications

## Erik D. Mundahl

## **Environmental Engineer, EIT**

Travis/Peterson Environmental Consulting, Inc. 3305 Arctic Boulevard, Suite 102 Anchorage, Alaska 99503

Telephone (907) 522-4337 Fax (907) 522-4313 EMundahl@tpeci.com

# **EDUCATION**

Michigan Technological University Houghton, Michigan B.S. Environmental Engineering

# **REPRESENTATIVE EXPERIENCE**

### **Environmental Engineer**

Travis/Peterson Environmental Consulting, Inc.

Staff Environmental Engineer for an environmental consulting and engineering firm. General duties include writing complex environmental documents, conducting baseline environmental research, site characterization and remediation, biological assessments and species data collection, writing scientific reports, managing projects, and interfacing with regulatory agencies and clients. Other duties include performing environmental records reviews, site assessments, biological analysis, soil sampling, wetlands delineations, and site reconnaissance. These duties require field work in remote areas throughout Alaska while working in inclement weather.

As an Environmental Engineer, he has 5 years of experience in Alaska. Assignments have required close familiarity with designing and implementing remediation plans, hazardous waste management, and performing Environmental Site Assessments and Facility Compliance Audits. Additional assignments have included wetland delineation and restoration work. Mr. Mundahl has designed, permitted, and provided construction supervision for watershed restoration programs including water quality monitoring and analysis. Mr. Mundahl also has a significant background in aquatic biology including fish collection and identification, stream/river habitat assessments, GPS based wildlife monitoring, and aquatic invertebrate collection, sorting, and identification.

## CERTIFICATIONS

### AGC of Alaska

NANA Training Systems Environmental Management, Inc. State of Alaska American Red Cross Wilderness Medicine Institute

Certified Erosion & Sediment Control Lead #AGC-12-0054 HAZWOPER 40-hr. Course, 2009 , Inc. HAZWOPER 8-hr. Refresher, 5/10, 5/11, 5/12 & 5/13 Certified Sanitary Survey Inspector CPR & First Aid Certified te Wilderness First Responder

# **EMPLOYMENT RECORD**

5/2009 - Present 5/2008 - 8/2008 5/2007 - 8/2007 Travis/Peterson Environmental Consulting, Inc. Restoration Science and Engineering Oasis Environmental, Inc. APPENDIX E: Field Notes

|                                          |                                           |                                                   |          |                         |                                  |                             |                                            |                                                   |                         |                                               | χ                          |                                         |                                         |                                         |                                              |                                           |           |                                           |                                   |                                               |                                           |                    |                               | Project / Client      | 4.6 Location Date                       |
|------------------------------------------|-------------------------------------------|---------------------------------------------------|----------|-------------------------|----------------------------------|-----------------------------|--------------------------------------------|---------------------------------------------------|-------------------------|-----------------------------------------------|----------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|----------------------------------------------|-------------------------------------------|-----------|-------------------------------------------|-----------------------------------|-----------------------------------------------|-------------------------------------------|--------------------|-------------------------------|-----------------------|-----------------------------------------|
| form and beneath old pour glant building | meltugher including loughou of temer tank | - Varley toparaphy. Low one as have deep, Shawdin | q resses | - Vilia of and and mill | Former Paul Plant Tauk Farm Sile | Statula visible orbeal site | (other than covered by tanks) mer any soil | - At your & Sile, no vegetation appeared stressed | and Strogged vegetation | - Maine header shows what now be soil stating | borge Londing soid mornin. | AVEL motorials ever Stored or staged of | School district according to Mervin. No | - Storage CONEXS all belong to City and | use or AVEC tanks according to Marvin (AVEC) | - Tonk sik to west has no history of AUEC | mand Sike | - Soils soturated with some standing nate | vegetation and/or heavily matted. | Visible. Noticeable marks lefton soil. sporse | - Location of former 12 AVEC tanks highly | Barge Landing Site | Mosely Clo-dy, windy low 50's | Project / Client 4VEC | Location <u>Solarik</u> Date 7/29/13 47 |

Date 7/29/13

7/20/13 49

Project / Client \_\_\_\_\_AVEC

Location Selowik

Former Plane Plane Cont. - Jank form location SHIL has old line steel liner structure in place, but heavily damaged - Creosote timbers still buick throughout site - Numerous large, partially buried pipes also present - Both site of former plant building and trank site mostly bare of vegetotion - Vegetation in immediate vicinity stressed and Soils hearily spained - Odor - hydrocorbon, present in low spot on sin by old plant bailding - Light hydrocarbon sheer visible on surface melturator - Site appears to only been half cleared of debris Large qualities of old flout debris stillon site : \$ 15 also obvious residents are using the site as · dumping location too, broken vehicle components, that and scrap from ready construction spread around the sile.

| ocation <u>Sela</u> | -:h         |            | Date 7/   | 30/13 4   |
|---------------------|-------------|------------|-----------|-----------|
| Project / Client _  | AVEC        |            |           |           |
| Cloudy, U           | very windy  | 1, temps   | in 40's   | or la 50s |
| Pour Plant          | and Tank    | Farm       | Site      |           |
| Soil Boring         | Depth (f    | +) Time    | PIDG      | er-)      |
| Poi                 | 2.0         | 9:18       | 687       |           |
| POZ                 | 2.0         | 9:27       | 106.7     | ?         |
| P03                 | 2.0         | 9:34       | 459.6     |           |
| P04                 | 2.0         | 9:42       | 317.2     |           |
| P05                 | 2.0         | 9:52       | 196.1     |           |
| 106                 | 20          | 9:56       | 103.3     |           |
| P07                 | 2.0         | 1:58       | 76.1      |           |
| P08                 | 2.0         | 10:04      | 2.2       |           |
| P09                 | 2.0         | 10:09      | 2.7       |           |
| 10                  | 2.0         | 10: 13     | 1.2       |           |
| PII                 | 20          | 10:18      | 2.1       |           |
| PIZ                 | 1.5         | 10:26      | 1.7       |           |
| P13                 | 2.0         | 10.31      | 51.5      | -         |
| P14                 | 2.0         | 10:34      | D.1       |           |
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|      |      |    |                    | Rive de la | e Martiz on boartische sloges as dets in orange<br>paint, alse martie den underside et beertuskis<br>kier<br>Richt 2000000000000000000000000000000000000 | Ply - 4.5 49:1<br>PlS Duplicate Pol<br>Marks on boardwalk elges as dots in evenge<br>paint, also mathe on underside at boardwalks<br>Rin SS O O SX<br>Rin SS O SX<br>Rin | P13 14,1 49.3<br>P14 - 4.5 48.1<br>15 Duplicate P01<br>a Marky on boorknakk elges as dats in arrange<br>paint, also mathe & indenside et bevelmaks<br>Right of 0 0 0 0<br>Right of 0 0<br>Righ | P12 136.0 32.8<br>P14 - 4.5 49.3<br>P14 - 4.5 49.1<br>P15 Duplicate P01<br>a Martiz on boardwake edges as dots in ensurge<br>paint, also methodiside at bourdwakes<br>Ci C O O O O O O O O O O O O O O O O O O | P11     94,2     35.2       P13     136.0     32.8       P13     14,1     49.3       P14     -4,5     48.1       P15     Duplicate     Pol       • Marks     Son basekeetk edges as dots in ensage     05     02       paint, also marke da underside at bourdacks     05     0     0       Vit     1     05     0     0 | 910 7.8 (15.)<br>911 94.2 25.2<br>913 14.1 49.3<br>914 - 41.5 49.3<br>914 - 41.5 49.3<br>915 Duplicate Pol<br>a Martha dra landerride obserbacks<br>paint, also mathe dra landerride obserbacks<br>136 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 10       7.4       7.4         10       7.8       15.1         11       94,2       35.2         13       136.0       32.8         13       14,1       49.3         15       Juplicate       101         16       3.8       48.1         15       Juplicate       101         15       Juplicate       101         15       Juplicate       101         15       Juplicate       101         15       Juplicate       10         16       10       10         16       10       10         1756       10       10         16       10       10         1756       10       10         16       10       10         1756       10       10         16       10       10 | 188 12.2 -2.5<br>190 20.7 7.4<br>100 7.8 15.1<br>110 7.8 15.1<br>12.04 7.0 11:50 0.1<br>12.04 7.0 11:53 0.0<br>13.04 7.0 11:53 0.0<br>13.04 7.0 11:53 0.0<br>13.05 3.0 11:56 0.3<br>14.1 49.3<br>15. Duplicate for<br>15. Duplica | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | for $838$ $38.1$ $92.01$ $3.0$ $11.42$ $0.8$ for $12.2$ $2.5$ $10.1$ $92.02$ $3.0$ $11.42$ $0.8$ for $12.2$ $-2.5$ $10.1$ $92.02$ $3.0$ $11.42$ $0.5$ for $2.0.7$ $7.4$ $7.4$ $92.02$ $3.0$ $11.48$ $0.5$ for $7.8$ $12.2$ $2.5.2$ $3.0$ $11.48$ $0.5$ for $94.02$ $3.2.8$ $3.0$ $11.50$ $0.1$ $3.0$ $11.50$ $0.1$ for $91.3$ $14.1$ $91.2$ $32.8$ $3.0$ $11.53$ $0.0$ for $0.1$ $49.3$ $32.8$ $92.5$ $3.0$ $11.53$ $0.0$ $0.1$ for $0.1$ $49.3$ $92.5$ $3.0$ $11.56$ $0.3$ $0.22$ $11.56$ $0.3$ $0.22$ $0.5$ $0.5$ $0.5$ $0.5$ $0.5$ $0.5$ $0.5$ $0.5$ $0.5$ $0.5$ $0.5$ $0.5$ < | $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $h_3$ $3!.9$ $5!.1$ $3!.0$ $1.0$ $1!.27$ $d.0$ $h_5$ $4!.7$ $4!0.1$ $3!.2$ $4!0.1$ $3!.2$ $4!0.1$ $3!.2$ $4!0.1$ $h_5$ $4!.7$ $4!0.1$ $3!.2$ $4!0.1$ $3!.2$ $4!0.1$ $3!.2$ $4!0.1$ $h_5$ $4!.7$ $4!0.1$ $3!.7$ $4!0.1$ $3!.6$ $1.0$ $1!.23$ $0.4$ $h_6$ $8.78$ $3!.1$ $3!.1$ $3!.0$ $1!.27$ $0.4$ $h_6$ $1!2.2$ $2.0.7$ $7!.1$ $3!.0$ $1!.23$ $0.4$ $h_10$ $1!2.2$ $2.0.7$ $7!.1$ $3!.0$ $1!.23$ $0.4$ $h_11$ $9!.2$ $2.0.7$ $7!.1$ $3!.0$ $1!.23$ $0.4$ $h_12$ $1!.2.7$ $2.0.7$ $3!.2$ $3!.2$ $3!.2$ $3!.2$ $3!.2$ $1!!.42$ $0.4$ $0.1!!.42$ $0.4$ $0.1!!.42$ $0.4$ $0.1!!.42$ $0.4$ $0.1!!.42$ $0.4$ $0.1!!.42$ $0.1!!.50$ $0.1!!.50$ | $f_{22}$ $38.5$ $83.0$ $84.0$ $83.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ $84.0$ <td><math display="block"> \begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td> <td><math display="block"> \begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td> <td><math display="block"> \begin{array}{c c c c c c c c c c c c c c c c c c c </math></td> <td><math display="block"> \begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td> | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$ | $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$ |

NHOI MUMON - Malynake minimally present but noted an O - No signs of spressed vegetution or other issues - Barye landing and mit permatrost encountered Soil Boring - No fuel abor at BL or My 52 encontrad offix 2.0 4 bys Q 30 [r bgs Notes for Darge Landing and Marine Header: Morine Project / Client AUEC Location Sela-in Header Sike Depth ( et Time PID ( ppm) 3.0 1.0 12:06 12:09 1.7 Date 7/30/13 0.9 Project / Client AVEC Location Selawik MHOI- 1 NRO/PRO, PHIL, GRO/BTEX, P& TLLP 8605-3 DRO/RRO, GRO/BIEr PIS DRO/12RO, PAH, GRO/ISTEX, Ro TULP BLOZ-3 DRO/PRO, PHH, GRO/BTEX, PL TUP PIZ 105 P10 Pos 2001 Sample Time 603 Po3 100 Laboratory Samples PO2 19 DRO/ 12/20, PAH, GRO/BTEX, P& TCLP DRU/RRO, 6RO/BIEY NRO/12/20, 6120/137EX DRO/ PLAN, GRO/ GTEX DRO/12RO, 6RO/13TEX DIGO/RED, PAH, GRO/STEX, PL TELP Date 7/30/13 55